

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Hurricane Iwa slammed into Hawaii recently, downing power lines and destroying property. Most DP sites were spared. However, the storm did underscore the islands' need for emergency computer backup facilities.

An Ill Wind

By Bruce Hoard

CW Staff

HONOLULU — Hurricane Iwa was an ill wind that blew no good for DPs in Hawaii.

However, things could have been a lot worse. Kauai, the island hardest hit by the storm, is relatively small and undeveloped and has few computers, let alone computer centers.

Fortunately for DPs here on Oahu, where there are computer centers aplenty, the island's more southerly location spared it the brunt of Iwa's bluster. Nonetheless, it underscored the fact that there is no statewide emergency backup facility in Hawaii.

Doug Carlson, director of corporate communications with Hawaiian Electric Co., explained what happened to his operation when the hurricane hit. "At the height of the storm on Tuesday, when it first hit Oahu, our generation went from a normal 930 megawatts to 64, and that meant we lost 94% of the power we

normally send out," he said.

Reporters and editors at *The Honolulu Advertiser* who were working on stories at their CRT terminals were rudely reminded that Iwa was in

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Bevy of Products Unveiled At Distributors' Comdex

By Bill Laberis

CW Staff

LAS VEGAS — Comdex/Fall '82, the showcase of the burgeoning computer distributor market, was held here last week, marked by a flood of product introductions and announcements.

Few if any of the products will be available to end users directly, but rather via the vendors' third-party distribution net-

work. Prices quoted reflect the vendors' suggested single-quantity price. Quantity discounts are available for large end-user orders.

From Digilog Business Systems, Inc. of Montgomeryville, Pa., came a family of desktop business micros, utilizing either the Intel Corp. 8086 or Zilog, Inc. Z80 chip technology and based on the Digital Research, Inc. CP/M operating system.

The systems feature a dual 8-bit and 16-bit architecture that allows users to take advantage of an existing library of 8-bit programs.

Available for shipment in January, the desktops are priced from \$4,000 to \$7,000.

Mad Computer, Inc. of Santa Clara, Calif., announced a 16-bit desktop, the Mad-I, said to work with concurrent CP/M and Microsoft, Inc.'s MS/DOS operating systems. The IBM Personal Computer-compatible micro features a modular design for add-on growth, a removable hard disk drive, 128K bytes of random-access memory and an 8086-based processor.

With shipments scheduled to begin in the spring, the Mad-I line is priced from \$3,000 to \$6,000, depending on options.

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Airlines, Agents Caught In Systems Dogfight

By Paul Gillin

CW Staff

A dogfight is going on in the airline industry, with computers and computer-based reservation systems as the weapons.

Automated airline reservation systems, which are now used by nearly 80% of U.S. travel agencies, have become a profitable and competitive tool for the airlines that market them. But a storm is gathering around the new automation. Increasingly, travel agents are claiming that bias built into the systems is costing them and their customers both time and money.

In an informal survey of its membership recently conducted by the American Society of Travel Agents, 81% of the agents reported misinformation problems with their automated systems.

"The reservation systems have been promoted as time-saving devices. But single vendors are short-changing the industry in trying to gain a competitive advantage from

them," said Larry Clark, president of Travel Center, Inc. in Tacoma, Wash., and chairman of the Asta automation committee.

American Airlines and United Airlines, which together split about 80% of the computerized reservation market, reportedly have spent \$300 million developing their Sabre and Apollo systems, respectively. Eastern Airlines, TWA and Delta Air Lines, Inc. all offer their own reservation systems, and Tymshare, Inc. has made a stronger commitment to market a system it bought from ITT last year.

Officials at American and United admit that bias exists in their systems, but say that is one of the reasons the automation was developed in the first place. "One of the ways we recover our investment is through the revenue that accrues to us because the agency has our system," said Thomas Plaskett, senior vice-president of marketing for American.

But some agents claim the major airlines that market reservation systems bury competitors' flight information so thoroughly that the travel agent is faced with the uncomfortable choice of calling competing airlines, wading through a half dozen or more screens of information or booking the flights that appear first on the screen. In almost every case, the first flights to appear are the ones

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Do Spreadsheets Mean Micros?

By Lois Paul

CW Staff

CHERRY HILL, N.J. — Does it make sense to buy a personal computer for everyone who wants to use spreadsheet software?

Eric J. Baelen, director of business systems development for RCA Corp., does not think so. Instead, he has installed Parallax Systems, Inc.'s Execucalc, a spreadsheet package that can be used on IBM 3270-type terminals connected to mainframes running under VM/CMS.

"We needed a mechanism to enable people to test-drive," he said of his decision to install Execucalc. "We are not trying to keep people from using personal computers, but we want them to use them in the places and applications that are most appropriate," he said.

His feeling is that the personal computer is most effective for quick analysis or to answer "what if"-type questions. If the user wants to build

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CW Survey

DP Managers Deny Ageism

By Marguerite Zientara

CW Staff

Is age discrimination rampant in the DP industry? In stated attitudes, no; but in practice, maybe — at least in management positions.

While an overwhelming 205 out of 207 DP executives recently surveyed said they would be willing to hire people over 40 years of age, only about half indicated they had ever done so.

The survey went out to 500 directors, managers and supervisors of DP/management information sys-

tems services from all sizes of installations in every area of the U.S., with 41% responding. All survey recipients were chosen through a strict probability sample from *Computerworld's* subscriber list.

Of the 207 respondents, 101 (48.7%) said they had hired people over 40, while 106 (51.2%) said they had not, with a few emphasizing they had "never had the occasion."

Of the 101 who indicated they had hired over-40 personnel, 49 (48.5%) survey respondents said they hired

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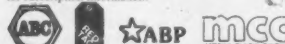
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Magazine on IBM Micros

CW to Publish 'PC World' in '83

LAS VEGAS — Patrick J. McGovern, chairman of CW Communications, Inc., has announced the formation of PC World Communications, Inc., which will publish *PC World*, a new magazine aimed at the IBM Personal Computer market.

McGovern also announced the appointment of David Bunnell as publisher and editor-in-chief of *PC World*, as well as president of PC World Communications.

The magazine will be dedicated to the users of IBM and IBM-compatible personal computers, McGovern said, with the first printing scheduled for January and an initial circulation of over 100,000. Distribution will be confined to the U.S. and Canada, with publication in Europe and Japan expected to be announced soon.

According to Bunnell, the magazine will report on the growing body of software for IBM Personal Computers as well as peripherals. Also included will be interviews with users,

applications notes and other items of interest to Personal Computer users.

"We want to be advocates for [IBM Personal Computer] users around the world," Bunnell said. "Instead of simply reporting what's happening in key areas, we will push [IBM Personal Computer] technology and make it happen. Our readers will reap benefits by being the first to know how."

Bunnell also announced *PC World's* Project One, which includes plans to link several IBM Personal Computers to a local-office network. Each Personal Computer on the network will be able to communicate with the others as well as to share hard disk storage, multiple printers and telecommunications facilities.

"We are going to set up an office network that will advance the state of the art in personal computing, and then we'll tell our readers all about how we did it," he commented.

Bunnell predicted *PC World* will grow to more than 600 pages per issue next fall with a paid circulation of over 250,000.

Other appointments announced last week for *PC World* include:

Cheryl Woodard, former associate publisher of *PC* magazine, who was named *PC World's* associate publisher in charge of sales and marketing. She was also appointed vice-president of PC World Communications; Jacqueline Poitier, who was named the magazine's associate publisher in charge of art and production. She was also appointed as a corporate officer; Andrew Fluegelman, former associate editor of *PC* magazine, who was named editor of *PC World*. He is also co-author of *Writing in the Computer Age*, to be published by Doubleday & Co., and is also the founder of Freeware, a software company that depends entirely on voluntary contributions for revenue.

In addition, Steve Cook, formerly of *PC*, was named *PC World's* senior technical editor. He is co-author of *The Apple II User's Guide*; Kearney Reitman, formerly with *PC*, was named senior editor; and Jeremy Joan Hewes, co-author of *Writing in the Computer Age*, was named associate editor. Noreen St. Pierre, J. Mark Doss, Meredith Browning and Rodney Brooks were also named to the new publication's staff.

CICS Meet Set Dec. 15

NEW YORK — The next meeting of the Teltech CICS Users Group (CUG) is scheduled to take place here on Dec. 15.

The topic of this meeting will be "CICS/VS Application Development Systems," and it will include technical presentations on IBM's DMS, Cincom Systems Inc.'s Mantis, Pansophic Systems, Inc.'s MIS/OL, Oxford Software Corp.'s UFO and Multiplications, Inc.'s Accolade system.

There is no registration fee for this event. Further details are available from Teltech at 548 Fifth Ave., New York, N.Y. 10036.

Corrections

The column "Implementing a Nonprocedural Syntax" on Page 43 of this issue of *Computerworld* incorrectly carries John P. Murray's byline. This column is actually one part of Werner Frank's Softline series.

In a story entitled "Interface Out for Micros" [CW, Nov. 29], the wrong address was given for Agile Corp.

The correct address is 25 E. Trimble Road, San Jose, Calif. 95131.

In "'Computer Co-Op' Boosts Trio's Buying Power" [CW, Oct. 25], the vendor of the Distribution Management System software should have been identified as Harris Data Service, Inc. of Milwaukee, not Harris Corp.

This Week

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CW 12/6

Execs Praise Older Workers, But Slow to Hire

By Marguerite Zientara
CW Staff

While only about half of the 207 respondents in a recent *Computerworld* survey said they had actually hired anyone over 40, many who had not done so sang the praises of the older worker enthusiastically.

Older workers are "usually reliable, [possess] maturity [and] experience. Younger employees [can] learn from them (if they are smart enough to pick his brains)," wrote Maurice

Steinberger, DP manager for Seeley Medical Corp. in Euclid, Ohio.

A typical response was, "Age should not be a factor when hiring. The only considerations made should be of experience, capability and attitude," wrote a DP supervisor at a Texas-based oil company.

Lundy Castro of Upper Peninsula Power Co. in Houghton, Mich., wrote, "If they could do the job, I would hire them." Acknowledging the suspicion of age discrimination,

he added, "I expect they would be more likely not to change jobs, since it would be harder for them to find a new job."

Much More Valuable

On the other hand, "If they were qualified for a position, they would most likely have from five to 20 years of experience behind them, making them potentially much more valuable to the company," wrote Russ Nordstrom, DP manager at W.E. Lahr

Co. in Minneapolis.

James R. Moore, programmer/analyst for Hub City Food in Marshfield, Wis., replied, "I feel if the person is the best qualified person for the job, I don't care how old, what sex or what color, we will hire them."

Some answered based on personal experience. "I am over 40," wrote Gary Sandstad, DP manager for School District 25 in Pocatello, Idaho. "I know I am qualified, ergo, I suspect others over 40 may also be qualified."

While noting that race, age and sex are "immaterial," John Hoskin, DP manager for International Survey Research Co. in Chicago, had other misgivings. "I have had few applicants over 40, however, and do not know how they would react to being supervised by a person younger than themselves."

One DP director in Denver wrote, "Salary requirements of [the] older employee may be prohibitive." While indicating he would generally hire anyone over 40, he added, "I would not hire an older person if over-qualified for job."

DP Managers Deny Age Discrimination

(Continued from Page 1)

them for operations jobs, including data entry clerks and computer operators. Twenty-two respondents (21.7%) had hired people over 40 for programming positions.

Workers over 40 were hired for analyst positions, including programmer/analysts and systems analysts, by 31 of the 101, or 30.6%, the survey showed. Eleven of the 101 hired supervisors in the over-40 age bracket (10.8%), and two of the respondents hired data base administrators who were over 40 (1.9%).

Two DP executives said they had hired consultants over 40 (also 1.9%), and six indicated they had filled various technical and secretarial positions with workers over 40 (5.9%).

For management positions, the figures are among the lowest. Nine participants indicated they had hired project leaders or project managers in the over-40 category (8.9%), while six (5.9%) noted they had hired DP managers over 40. Other management positions, including programming manager and DP operations manag-

er, were filled by people over 40 in six cases (5.9%).

Because some executives indicated they had hired people over 40 in several categories, the percentages total more than 100%.

Survey respondents were asked to indicate how many employees they now have in the DP department in the following age categories: 18-30, 30-40, 40-50, 50-60, 60-70 and over 70. Eighty of the 207 (38.6%) respondents said their oldest DP employees

were age 40-50, followed by 51 (24.6%) who said their oldest workers were 50-60.

Of the 207 replies, 47 (22.7%) indicated their oldest employees fall into the 30-40 age group, while 11 (5.3%) each said their oldest workers were 18-30 and 60-70. All the DP employees of Koinonia Partners, a nonprofit Christian service organization in Americus, Ga., are over 70 — 20 men and 50 women — according to accountant Ron Foust.

Guilty Plea Filed in IBM Shooting

By Susan Blakeney
CW Staff

BETHESDA, Md. — Edward Thomas Mann, whose May 28 shooting spree in an IBM office building left three people dead [CW June 7], has entered a guilty plea to Montgomery Circuit Judge William C. Miller.

The 38-year-old former IBM marketing representative entered the

plea late last month. He has been held at the Montgomery County Detention Center without bail since the shooting took place.

Although the shooting took place months ago, Mann's trial has been delayed because of a question concerning the accused's mental competency both to defend himself and to stand trial, according to Judge Miller's office. Thus far, five out of eight doctors have deemed Mann incompetent for both tasks.

Mann Fires Attorney

Mann fired his original attorney in September, requesting that he be allowed to represent himself. But because Mann's mental competency is as yet unresolved, the state appointed Theodore Wieseman, a public defender, to represent him.

Judge Miller's office reported that further hearings on Mann's guilty plea will not be held until the issue of Mann's mental competency is settled by a report from the Clifton T. Perkins Hospital, where Mann has been examined. The Perkins medical statement is reportedly en route to the judge, and a hearing will follow on the heels of its reception, Miller's aide said.

In the meantime, Roger Galvin of the State's Attorney's Office, who is in charge of prosecuting Mann, has entered a request for the death penalty on behalf of the state of Maryland.

Galvin said his office is still preparing for a formal trial. But if the defendant's guilty plea is accepted, a sentencing phase will automatically ensue.

IBM Trade Secret Case Resolved

By Jim Bartimo
CW Staff

ARMONK, N.Y. — The IBM vs. Bridge Technology, Inc. trade secrets case has ended with a permanent injunction and final judgment against two former IBM employees who were fired from the company earlier this year for allegedly misappropriating secret information about IBM's Personal Computer.

Under the terms of the injunction and judgment, Lewis C. Eggebrecht and Peter J. Stearns cannot reveal or use any IBM trade secrets or confidential information and are prohibited for three years from designing, developing, manufacturing or marketing the computer products that were at issue in the case. The pair must also repay to IBM an undisclosed portion of their salaries.

Commenting on the judgment, John R. Opel, IBM president and chief executive officer, said IBM "achieved essentially everything we expected to achieve in the courts.

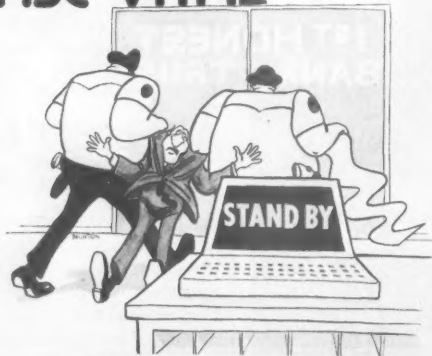
Our primary objective is to protect IBM's physical and intellectual assets."

The former senior engineers were fired by IBM Sept. 13 and charged with attempting "to sell design information relating to unannounced IBM products in the personal computer field," according to a civil suit filed in Westchester County State Supreme Court [CW, Nov. 29]. During their employment at IBM, the pair, along with William W. Erdman, another IBM employee, reportedly founded Bridge Technology.

The firm that handled Bridge Technology's incorporation, which occurred in July, would not comment on the decision. William Greer, who represented Bridge Technology, did not return calls by press time.

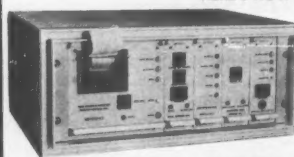
"Undoubtedly, the past two months have been difficult for the defendants, and we hope we never again have to take this kind of action against employees for violating the company's trust," IBM's Opel said.

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Buried in Documents

U.S. Alleges Hitachi Devised Secret Code

By Jeffrey Beeler

CW West Coast Bureau

SAN FRANCISCO — Hitachi Ltd. was so deeply embroiled in an effort to steal confidential IBM product information that the Japanese company even devised its own secret code to enable participants in the scheme to operate without detection.

That allegation emerged from a mass of court documents filed here recently by prosecutors in the five-month-old IBM/Japanese industrial espionage case.

Reports of the existence of an alleged Hitachi secret code appear to lend credence to the prosecution's long-standing charge that the Tokyo-based company conspired to transport stolen IBM systems technology from the U.S. to Japan.

The reports also appear to undercut Hitachi's counterclaim that the charges currently facing it are merely the product of government-engineered "entrapment" and an IBM attempt to squelch its Japanese competition.

Hitachi, Mitsubishi Electronic Corp. and 21 of their employees or alleged representatives were indicted last June on conspiracy-related charges stemming from the trade-secrets theft case.

Federal prosecutors have accused the suspected conspirators of participating in a plot in which the Japanese allegedly paid a total of \$648,000 in an effort to acquire supposedly restricted IBM product know-how. The payments purportedly went to Federal Bureau of Investigation undercover agents posing as dealers in gray-market microelectronics.

Although Hitachi denies the allegations against it and has consistently maintained its innocence, the recent court filings appear to tell a different story.

The filings include voluminous government documents describing an alleged secret code that Hitachi

Verndale St., Brookline, Mass. 02026, reportedly used to indicate which IBM materials it wanted stolen and how much it was willing to pay.

Evidence of the suspected code reportedly appears in a Dec. 3, 1981, letter from Hitachi senior engineer Kenji Hayashi to an American "collaborator" who eventually proved to be a federal undercover agent. Among other things, the letter asks the recipient to supply Hayashi with five computer-related "studies," each dealing with a different facet of large-scale systems technology.

Each of the studies is accompanied by a unique code name, proposed deadline date and relative priority

rating. One such study, for example, bears the code name of "P12-K architecture," while another is referred to simply as "P9-EF M-code."

In reality, the studies amount to little more than thinly veiled requests for stolen IBM systems technology, the federal government contends in its court filings. Each code name reportedly corresponds to a different target product and is derived by adding the digits in the unit's IBM model number.

P12-K, therefore, is Hitachi-ese for the 3081K; P9-EF M-code, for 3033 extended function microcode. In both cases, the "P" in the code refers simply to "processor," the court doc-

uments state.

All of the studies that appear in Hayashi's letter are also listed as having been assigned to one or another nonexistent researcher for completion. P12-K and P9-EF, for example, were reportedly entrusted to "T. Johnson" and "T. Edwards," respectively.

To calculate the asking price for a given high-technology "study," a reader of the Hayashi letter need only multiply the position number by \$1,000. "Johnson," for example, begins with a "J," the tenth letter in the alphabet, and thus refers to 10 multiples of \$1,000 — or \$10,000, the prosecution contends.



Randolph B. Williams

Patents Tracked In Tech Areas

BOSTON — Communications Publishing Group, Inc. has introduced a series of twice-monthly reports that track U.S. and international patents in high-technology fields.

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CW12/6/82

Hurricane Shows Hawaii Needs DP Backup

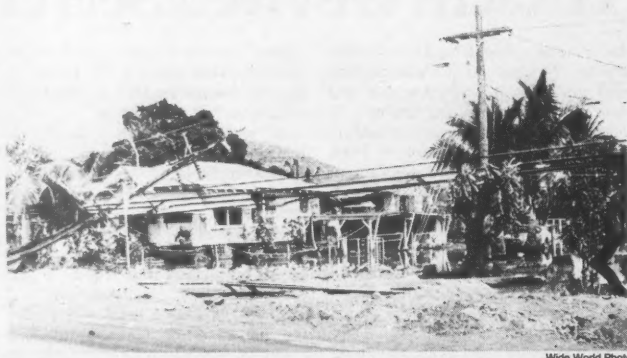
(Continued from Page 1)

town, according to Gary Wild, director of computer services with the Hawaii Newspaper Agency. "Some of them did lose stories," he said.

Wild said the initial outage occurred at about 7 p.m., lasted for two hours and was followed by intermittent outages throughout the night. As a result, only Oahu residents received early editions of the *Advertiser*. The outer islands — with the exception of Kauai — received their newspapers later in the day.

Does the *Advertiser* have a backup system? "No, we don't," Wild said. "We'd love to have an uninterruptible power supply [UPS] here, but we never could get quite to the point to spend the money," he said.

Maria Drey, director of data processing for Aloha Airlines, said her staff was ready for Iwa. "We did pretty good here," she reported. "We shut down about five o'clock, covered everything with plastic, turned off all the power so we wouldn't get any surges, locked everything up and left it," she declared.



Downed powerlines, seen above draping a home on the island of Oahu, and loss of electrical service and power were the major problems caused by Hurricane Iwa as it swept through the Hawaiian islands recently.

Aloha has a reciprocal agreement to share computer resources with neighboring Hawaiian Airlines in case of an emergency, she noted. It maintains its reservations on the Continental Airlines computer at the Honolulu airport and the Contin-

ental system remained operable throughout the storm, she stated.

The DP director said that there is no empty "shell" anywhere in Hawaii equipped with a power supply and designed to house an emergency data center. "There has been a lot of

talk about that," she added.

Ben Fukumoto is deputy director of data systems for the city and county of Honolulu. According to him, the two IBM 4341s under his direction weathered the hurricane without loss of data. The city and county have a backup generator that takes 15 minutes to activate and can run for about three days without refueling.

If the generator fails, he can turn to the state computer center a couple of hundred yards away for help. The University of Hawaii is also a backup. He replied to a question about the existence of a shell-type backup center by saying, "I don't think there's anybody who has that kind of luxury in the state of Hawaii."

George Kvidpra, manager of information systems at Hawaiian Electric, was perhaps the best prepared of any company contacted by *Computerworld*. "We were real lucky, we had a UPS system," he explained. He said the data center experienced only minor problems such as air conditioning failures and the need to reset transformers manually.

Washington Update

Interest Withholding Tax Subject of Senate Bill

WASHINGTON, D.C. — A bill to repeal the withholding tax on interests and dividends scheduled to go into effect next July was introduced in the Senate last week.

The bill is aimed at new Internal Revenue Service regulations requiring financial institutions to withhold 10% from dividends and interest and pay it directly to the IRS. Banks and savings and loan institutions face considerable reprogramming to be able to comply with the measure [CW, Nov. 22].

The new regulations are meant to target those individuals who do not

correctly report dividend and interest income to the IRS. The new Senate bill, introduced last Tuesday by Sen. Robert W. Kasten Jr. (R-Wis.), would replace the withholding provision with stricter reporting requirements.

Kasten said his bill is needed because the withholding would take \$3 billion out of circulation, money that could be used, among other things, to finance home mortgage loans. He also noted that proposals to exempt older Americans and others with limited tax liability from the withholding requirements would only add to the "paperwork nightmare" of the IRS plan by requiring the filing of additional IRS forms.

A Kasten aide said last week that the bill will be pushed early in the first quarter of 1983 which, he noted, should be before financial institutions and brokerage houses have to change their software to comply with the July IRS regulations.

Benchmark Tests Acceptable: GAO

WASHINGTON, D.C. — Benchmarking, although costly and difficult, is usually the only acceptable method of validating new federal DP systems, the General Accounting Office (GAO) concluded in a recent study.

Although often criticized by systems vendors as unnecessarily expensive, time-consuming and, in some cases, anticompetitive, "when properly constructed and used, the benchmark test is acceptable to the computer industry, as a fair and unbiased test of a vendor's proposed system," the GAO said.

The GAO, the auditing agency of Congress, was asked by the House Appropriations Committee to look into the use of benchmarks because the committee was concerned about the high cost of benchmarks. Confirming the cost factor, the GAO looked at 73 agency computer procurements and found benchmarks usually cost between \$50,000 and \$200,000.

Despite these costs, the GAO said, there were "no practical alternatives to benchmarking" in most of those procurements. The report suggested better managed benchmarks and more communications between vendor and purchaser could eliminate many of the difficulties stemming from the process.

The study noted private organizations do much less benchmarking than do federal agencies, but said the requirements for fully competitive procurements in the federal sector make this inevitable.

The GAO also recognized that the cost of benchmarking can sometimes freeze out small vendors from participating in government bidding. The report recommended that "for fully competitive procurements of computer equipment with a projected system life contract value of less than \$2 million, benchmarking should be discouraged because of its high costs."

Hearings to Consider Computer Matching

WASHINGTON, D.C. — The Senate Subcommittee on Government Management Oversight will hold hearings next week on the use of computer matching, in which records held by state and federal agencies are compared to detect fraud or mismanagement in government programs.

The computer matching hearings, set for Dec. 15-16, will hear testimony from, among others, Richard P. Kusserow, inspector general of the Department of Health and Human Services, and Thomas McBride, until recently Labor Department inspector general and co-chairman of the administration's computer matching project.

The committee will also hear from John H. Shattuck, director, Washington Legislative Office, American Civil Liberties Union; and from Prof. David Linowes and Ronald Plesser, chairman and general counsel, respectively, of the Privacy Protection Study Commission.

"Computer matching offers an excellent opportunity for the government to crack down on waste and fraud," Subcommittee Chairman Sen. William Cohen (R-Maine) said in a statement announcing the hearings, which were rescheduled from earlier this year. "But," Cohen added, "there must be proper safeguards to protect against an unwarranted invasion of privacy."

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FBI Spokesman Confirms Activities

Computers Seen Weapons in Mobsters' Arsenal

By Jim Bartimo
CW Staff

Most computer crime experts agree that organized crime is using computers for illegal activities, but they can only guess to what degree and purpose.

Although the Federal Bureau of Investigation has stepped up its own use of computers in investigating

and prosecuting members of organized crime [CW, Nov. 22], an FBI spokesman could only confirm that criminals are "using the computer to support their legitimate and illegitimate activities."

The use of ill-gotten booty in legitimate businesses is one area in which criminals are most suspected of using computers.

Midwest Mob's Assets

For example, one organization in the Midwest controls 89 businesses with total assets of \$800 million, according to August Bequai, a Washington, D.C., attorney specializing in computer crime who claims to have

worked on cases involving mob-controlled firms that use computers.

The U.S. Chamber of Commerce estimates that organized crime has a net worth of \$150 billion and earns \$600,000 per hour in gambling profits alone. This gives organized crime the highest net income of any business in the country, he pointed out.

"If the mob controls a vast empire, common sense indicates that they're using computers to manage businesses, launder money and puff up accounts," Bequai continued.

In its earliest days, organized crime was even more decentralized than it is today, but the introduction of the telephone allowed these

groups to work more closely together when necessary. Bequai points to the computer as a technological advance that will give organized crime more power. "You have organized crime getting more sophisticated," Bequai said. By using the computer, "they can get into bank fraud, commodities and welfare fraud."

Another area in which organized crime is suspected of involvement is electronic funds transfer. "I have talked to people in the Justice Department, and they were concerned that organized crime was using electronic funds transfer to launder money," said Donn Parker of SRI International, Inc.

FTC, MIB OK Consent Order

By Paul Gillin
CW Staff

BOSTON — The Federal Trade Commission (FTC) and the Medical Information Bureau (MIB), an insurance trade association which reports information to 700 companies in the U.S. and Canada, have agreed to a consent order aimed at correcting alleged violations of the Fair Credit Reporting Act (FCRA).

The consent order states that MIB will correct misleading language in its computer-generated files and will ease access by private citizens to non-medical information, according to Douglas Husid, acting regional director of the Boston office of the FTC. MIB president Neil Day said the changes represented "nothing of substance," and added, "The FTC looked at hundreds of files and asked us to make changes in three or four areas. They found very little they felt was not consistent with federal law."

The Westwood, Mass.-based bureau, whose clients write 95% of the life insurance policies in the U.S. and Canada, operates a computerized data bank service to alert life insurance firms of potentially bad risks.

Among changes stated in the FTC's consent order and agreed to by MIB are:

- Elimination of the term "canceled" to indicate that inaccurate or obsolete information about a person has been deleted from the files. The FTC alleged that the term implied a bad insurance risk and might be used to deny someone insurance. MIB agreed in the future simply to delete the information.

- Ending certain restrictions on citizen access to nonmedical information. The FCRA requires a customer seeking nonmedical information in the files to provide identification only. The FTC alleged that the MIB was requiring a legal release as well, a redundant form which, Husid said, "We can only assume was meant to dissuade consumers from seeking information." The law releases MIB from liability for released information, rendering the release form unnecessary.

- Improvements in the reinvestigation procedure. MIB has made it extremely difficult for consumers to challenge information in its files, Husid alleged. While federal statute requires the bureau to reinvestigate any information disputed by the consumer, MIB had been requiring consumers to review the medical files in the presence of a physician, obtain identification from a nonrelative and to sign a release, he said.

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DP Manager Puts Spreadsheet on Mainframe

(Continued from Page 1)

his own data base, this raises a red flag for Baelen. "Three people will tell you they have the definitive data base on sales. All three are snapshots at different times. That is where a personal computer becomes inappropriate."

"We are welcoming personal computers, but like everything else they have been oversold," Baelen said. Use of Execucalc at RCA is intended to help Baelen apportion personal computers more adequately. Some of

the people who think they want a personal computer running the Visicorp Visicalc spreadsheet package later find they do not like working with the software or recognize that it is too simple a tool to meet their needs. Baelen's staff can then steer these people toward some of the user-oriented software packages available in RCA's information center.

"If we can save one personal computer and keep one person from making a mistake, we will have paid

for the product," he said. In addition, it can provide an upward migration path for users who have outgrown the capacity of Visicalc on their personal computer.

To date, there are only about a half dozen IBM Personal Computers being used at Baelen's operation, Corporate Information Systems & Services (Ciss), he said, noting, "I know of six. It is not clear I know of all of them."

Time-Sharing Services

Ciss is a centralized IBM facility to provide time-sharing services for RCA divisions worldwide. Ciss is running two IBM 3081 mainframes, which each have 16M bytes of memory. One is running under VM/CMS; the other is running under MVS for batch processing. There are generally 300 simultaneous users on Ciss's time-sharing system.

The division has an information center that includes products such as

Information Builders, Inc.'s Focus; Mathematica Product Group, Inc.'s Ramis II; SAS Institute, Inc.'s SAS; and Issco Graphics, Inc.'s Disspla. The firm is using Visicalc on IBM Personal Computers with 3270 emulation.

Although Baelen said his Visicalc users have not expressed any problems with the software, he said the weakest link in the chain for this product is its floppy disk storage. "We have experienced a number of outages." With Execucalc, the software can continue to be run on the mainframe if the personal computer fails. It can then be downloaded for backup.

Another area that Baelen feels Execucalc will provide an advantage over Visicalc is with regard to hard-copy output. "If you have ever waited for Visicalc to print," he said, "it doesn't spool. With Execucalc, it is virtual. You are queued, and you go on to your next task."

Compatibility Seen Key Factor

A key selling point for Parallax Systems, Inc.'s Execucalc software at RCA Corp. was its upward compatibility with Visicorp's Visicalc, according to Eric J. Baelen, RCA's director of business systems development.

Basically, RCA wanted to eliminate retraining the company's present Visicalc users, Baelen said. He is confident that little additional instruction will be necessary to move these people to Execucalc. They will need to become familiar with features such as Execucalc's Help prompts and diagnostic messages, which are not available with Visicalc.

A second key factor was the ability of the firm to run the software on existing hardware. "Even users who don't have [IBM] 3270s can use a simulator we have put up and will still have access to Execucalc," Baelen said, noting that this includes his secretary, who can run the product on her word processing system.

In testing Execucalc at RCA, Baelen's staff put up line items that the various departments are required to provide. These requested this year's budget figure, next year's estimated figure and the difference between them. With Execucalc, RCA is able to expand the column after that so that its departments can explain why they felt that the change should be

justified, he explained.

The RCA employees who have been testing Execucalc were financial and marketing professionals and programmers. Several managers who were "novices," except for their familiarity with 3270s, also used the product. Baelen said he himself will be using Execucalc.

Travel Agents Voice Reservations

(Continued from Page 1)

offered by the sponsor of the reservation system.

Agents say the favoritism has placed them in an awkward position. Both of the major vendors' systems reflect some bias and the vendors actively discourage agents from installing competitive systems. "We consider our relationship with the agency a total business relationship," said John Zeeman, senior vice-president of marketing for United.

"Some of the single-source vendors are editorializing in systems in the agents' offices," said Clark. "They are suppressing competing flights and lower fares and, in some cases, showing flights as sold out in face of a competing flight of their own."

Airlines do not deny that bias ex-

ists in their systems, but claim travel agents overstate the problem. "The issue has been blown out of proportion by people who don't have sufficient training to understand the system," Plaskett said. "A travel agent who has been automated for two years does not have enough expertise to judge the level of bias."

Hearings in the Spring

Nevertheless, Asta feels strongly enough about the bias to have asked the Aviation Subcommittee of the House of Representatives Public Works Committee to hold hearings to determine whether the practices are anticompetitive. The hearings will probably be held early next spring.

"We feel airlines sponsoring reservation systems are wearing two

hats," said Ray Greenly, director of aviation affairs for Asta. "The travel agent represents the common grazing ground for all airlines. As these systems become more of a conduit for information, agents feel it is essential they have accurate and complete access to information."

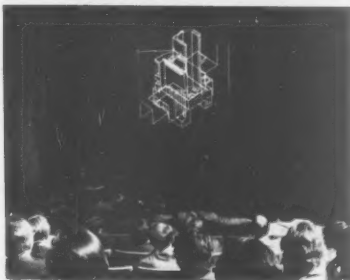
Preferential placement can be a bonanza for the sponsoring airline. Travel agents estimate an airline gets 20% to 30% more of their business after its automated reservation system is installed. In most cases, they say, agents will book from the first screen rather than scroll through a long list of competitors. "Making telephone calls can add 25% to the time required to put together a good itinerary for a client," said Clark.

Frequently, travel agents simply rely on their knowledge of the voluminous *Official Airline Guide* to find the lowest fare. "If I know another carrier has a lower fare, I'll override the system," said Marilyn Markwardt of Suburban Travel Service in Rochester, Mich. "Fortunately, we know how to do that."

Airlines deny that information is omitted for the sake of a competitive advantage. "There is an inference that an airline would play dirty tricks," United's Zeeman said. "You can't do that or the customer suffers. We go out of our way to make sure our system is accurate. You can only show so many screens."

American's Plaskett added, "The best service will always be on the first screen. The travel agent can learn to seek out the flights that are pushed down to the bottom."

Although travel agents decry bias in general, there are those who say it makes the business more competitive. "Actually, bias can be good," said Peter Bishop of Eastside Travel. "An unbiased system would make us all even. Travel agents know most of the systems are biased on connecting flights and a good agent will overrule the system to look for the best connection. Bias doesn't hurt a good travel agent. It makes us mad, but it also makes us work harder."



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Agents Offered Some Alternatives Movement Seen Toward Unbiased Systems

By Paul Gillin
CW Staff

The travel agents' frustration with bias built into their automated reservation systems has led to the recent development of purportedly "fair" systems.

Delta Airlines announced Datas II in July, proclaiming it "the world's first totally unbiased computer reservation system." Development began because "travel agents told us they wanted a system that displayed all flights on all carriers," according to Charles Poulton, Delta's director of marketing administration.

Datas II draws its data base from the "Official Airline Guide" and charges its competitors nothing to be included. Agents who request flights between two points at a specified time get a chronological display of all scheduled departures for three hours before and after the time requested.

"Judging from the response, we made a good choice," Poulton said. Delta expects to have nearly 700 of

Airlines Weigh Info Differently

Airlines use a variety of methods to weigh information on their computer reservation systems in favor of their flights.

American Airlines' Sabre system, for example, lists carriers by a three-level classification according to their participation in the network. As host airline, American is always listed first.

"We deserve to be host because we developed the system," said Thomas Plaskett, American's senior vice-president of marketing. Co-hosts, or airlines that pay American a fee to be listed on Sabre, are ranked second, with all other nonparticipants grouped at the bottom.

American also routinely assigns a time penalty ranging from 15 minutes to an hour to the length of each competitive flight. The practice is "strictly to make the host's flight more attractive," according to Ray Greenly of the American Society of Travel Agents.

United Airlines' Apollo system displays information for United flights both before and after the time requested, but only shows competitors' flights scheduled on or after the request. So an agent asking for a 5:00 p.m. flight to Los Angeles would see, for example, that United offers a 5:45 p.m. flight, but that TWA has one scheduled at 4:35 p.m.

But the most frequent ground for manipulation is in the complex web of connecting flights. Travel agents say that the computers often suggest unnecessarily long connecting routes in order to work the vendor into the flight plan. And in those cases, they say, the traveler is the loser.

"I saw an example recently in which you had to scroll through seven screens to find the fastest flight from Boston to Seattle," said Peter Bishop of Eastside Travel Service in Bellevue, Wash.

the systems installed by May and hopes to double that number by the end of the year. "We feel our schedule is competitive in a competitive market," Poulton said. "In this system, all things are equal. It's our job to make people want to book Delta."

A variation on the theme is being advanced by Tymshare, Inc., which offers Marsplus, a system that provides direct access to the reservation systems of six airlines, including Air Florida, Eastern Airlines, Northwest Airlines, Ozark Airlines, TWA and Piedmont Airlines.

While Marsplus does not eliminate bias, it at least spreads it around, according to Ray Foss, director of

sales for Tymshare's Travel Management Services. "You're not restricted to the information one carrier elects to provide," Foss said. "You can access several systems that are biased different ways." Marsplus also allows agents to make reservations directly through an airline's reservation system, Foss said.

With barely 1,300 installations between them, Delta and Tymshare are small fish in a pond dominated by United Airlines and American Airlines, with over 12,000 installations between them. "We feel no competitive threat from Tymshare or Delta," said John Zeeman, United's senior vice-president of marketing. "Their

systems are less rich in functionality."

But neither vendor is trying to challenge the giants. "We'll offer it as an adjunct system for now," Delta's Poulton said. "The agents will have the opportunity to work with it, and hopefully we'll have the opportunity to displace their existing system."

"Carriers can join our systems without making that big capital investment," said Tymshare's Foss, who conceded that Marsplus would look better if more airlines participated. "We really have to focus on travel agents who don't want to be aligned with specific carriers."

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3. Much of the structured-programming material comes from a book by Paul Noll, *Structured Programming for the COBOL Programmer*. This book is currently used by dozens of businesses for inhouse training. And many companies have adopted its principles as their standard for program development. So I'm sure you'll find the structured-programming content to be practical, helpful, and a real boost to your programming skill and productivity.

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same structured techniques that are taught in *Structured ANS COBOL*.

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Comdex Success Reflects Small Systems' Growth

By Bill Laberis
CW Staff

LAS VEGAS — When it comes to wheeling and dealing, the hottest action in town last week was not at the craps tables but on the floor of the Las Vegas Convention Center.

For there, amidst the glitter, hype and hucksterism, gathered a throng second in size only to the National Computer Conference in computer trade shows.

In addition to the 30,000 attendees who had preregistered, Comdex/Fall '82 attracted another 10,000 attendees the first day it opened, leading organizers to boast that attendance would approach the 50,000 mark. Just two years ago, the fall edition of Comdex drew only 9,000 attendees.

CW at Comdex

The 1982 attendance figures, coupled with the 1,100 exhibitors that jammed the conference floor, are testimony to the explosive growth in low-end computer systems, marketed primarily by third-party distributors. All 2,300 booths at the show were sold out by last January, according to the Interface Group, which organized Comdex.

"The small systems are the current wave, and it's those people on the floor that are going to get the products to the end users," said one conference organizer. "They're all out there now doing business, and busi-

ness has been very good."

On the surface, the show at times assumed a carnival atmosphere, replete with a tightrope walker, mimes, hawkers and enough giveaways to weigh down even the burliest of computer trade show aficionados.

The mood at the vendor booths, however, was strictly business.

The crew at the booth of Honeywell, Inc. underwent an "intense, six-hour sales orientation" prior to the show, according to William F. Boone Jr., market development manager.

Boone said the vendors have "roughly two minutes to make a pitch to the distributors. If they don't like what you're saying, they only have to move a few feet to another [vendor]."

"This is our show, and it's a good one," a West Coast distributor said.

New Products Flood Comdex

(Continued from Page 1)

A family of small business systems based on Intel's 8086 chip was announced by Victory Computer Systems, Inc. of San Jose, Calif.

The Factor series, based on the Motorola, Inc. 68000 chip technology and designed for industrial and process users, was also announced.

Both series will support the CP/M operating system, while the Factor series will also support Bell Laboratories' Unix operating system. With shipments beginning in early 1983, the systems will be priced from \$16,000 to \$26,000.

Another IBM Personal Computer-compatible line was announced by Corona Corp. of Westlake Village, Calif. The Corona Portable Personal Computer features 128K bytes of memory, expandable to 512K bytes, a detachable personal computer-type keyboard, built-in high-resolution graphics and serial RS-232 and parallel ports, the vendor said.

The Corona Portable Personal Computer is priced about \$2,500.

Furthering its Apple Computer, Inc. microcomputer-compatible line, Franklin Computer Corp. unveiled the Ace 1200. This micro features 128K bytes of RAM and reportedly can run both Apple II- and CP/M-based programs.

The Ace 1200 costs \$2,495 with one disk drive from the firm at 7030 Colonial Highway, Pennsauken, N.J. 08109.

Complementing the small systems announcement were several graphics terminal and graphics software introductions, including the VX series of graphics terminals from Vectrix Corp. of Greensboro, N.C.

Intended as a graphics display for a host, the series includes two graphics processors, an RPG monitor, printer and keyboard, the company said. The series costs about \$2,000.

Falco Data Products, Inc. of Sunnyside, Calif., announced its entry into the graphics terminal market with a product said to emulate the Tectronix, Inc. 4010 terminal.

The TS-10 card reportedly inserts into many of Falco's graphics terminals and features a zoom control to allow users to magnify any portion of the display. Lines can also be drawn and erased.

The TS-10 will be available in January and will be priced at about \$900.

Term Tronics, Inc. (TTI) of San Diego unveiled its multiprotocol Ascii color display terminal, an aid to emulate the IBM 3279-2A.

Available as both a stand-alone and a cluster terminal, the TTI 3270/9A display communicates simultaneously with an asynchronous host via a separate communications port. The TTI is priced at about \$3,000.

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Micro-to-Mainframe Links Bow

Microcomputer Networking Packages Debut

By Bill Laberis
CW Staff

LAS VEGAS — Among the plethora of products unveiled at Comdex/Fall '82 here last week were several introductions of microcomputer networking packages and purported micro-to-mainframe links.

Nestar Systems, Inc. of Palo Alto, Calif., announced Plan 4000, a networking product said to support simultaneously the IBM Personal Computer, as well as the Apple Computer, Inc. Apple II and Apple III personal computers.

Nestar claimed the package is the first to incorporate the networking technologies of both Datapoint Corp.'s Arcnet and Xerox Corp.'s Ethernet.

Plan 4000 allows the IBM and Apple personal computers to be connected to the same network via a plug-in interface card costing \$595. The micro workstations can then exchange information by several means, such as Nestar's electronic mail.

Up to 255 stations of any mix of Apple and IBM personal computers are supported on each network segment, while up to 548M bytes of disk storage can be supported on a single file server, the vendor said.

The network is baseband and uses token-passing protocols, transmitting data at 2.5M bit/sec.

Nestar also announced 3270 Emulator Server, operating with Plan 4000 and said to be a multistation link between personal computers and mainframes.

The package emulates a cluster controller, allowing user stations also to emulate a subset of IBM's Information Display System.

Nestar claimed the emulator is unique among 3270 emulators in that only one port into the mainframe is needed to serve all network users, rather than one port and one modem pair for each workstation. The 3270 Emulator Server carries a one-time license of \$1,995, plus \$195 for each workstation using the network service.

Vector Graphic, Inc. of Sunnyvale, Calif., announced a proprietary local-area network said to use twisted pair telephone wire for hookup instead of coaxial cable.

Local Interactive Network Communications (Linc) requires only a plug-in controller board, modular wall sockets and company software to transform any single-user Vector 4 microcomputer into a network station. This first Vector network product can support up to 16 stations, each separated by up to 2,000 feet. Data transfer rates within the network are 750K bit/sec.

Linc reportedly permits the sharing of disk files, high-speed printers, communications facilities and electronic mail service by any micro node, while each workstation retains full capability as a word or data processor for non-network functions.

Available next March, the controller board for Linc is priced at \$500, and the software is in the \$300 to \$500 range.

Protocol Computers, Inc. announced a package said to permit

transfer of files between a personal computer diskette and a Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) mainframe host.

The PCI 7887 file transfer facility allows a host file to be transferred to a diskette, manipulated by a personal computer software application and transmitted back to the host in message form. The PCI 7887 package is priced at \$200/copy.

Also, Apple Computer announced it will begin marketing a cluster con-

troller emulator made by Protocol.

Apple's 3270 controller emulator reportedly allows up to seven Apple personal computers to be attached to an IBM 3270 network, serving as an interface between the personal computers and an IBM host. The hardware/software combination package will be available in versions to interface either SNA/SDLC or bisynchronous IBM systems.

With shipments to begin next April, the 3270 controller emulator will be priced at about \$1,000/termi-

nal connection.

Technical Analysis Corp. announced what it claims is the first interface for direct coaxial cable attachment of IBM Personal Computers to IBM 3270 controllers.

Irma is a printed-circuit board that fits into any available slot in the IBM Personal Computer, attaches via coaxial cable to most 3270 controllers and emulates a 3278 display, the company claimed. Irma operates in the 3278 native mode and requires no additional phone line, modems or communications front-end support for either local or remote environments, the vendor said.

Irma is priced at \$1,195.

CW at Comdex

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USPS Nine-Digit Zip Gets Qualified Approval

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Congressional investigators have given qualified approval for U.S. Postal Service (USPS) implementation of nine-digit Zip Codes, and barring a concerted effort by opponents to the plan, widespread use of the longer numbers will begin within a year.

In what is probably not the last word from Capitol Hill on the long-running controversy over the Postal Service's "Zip + 4" plan, the General Accounting Office (GAO) concluded that if properly implemented the longer Zip Codes could be beneficial to the service and businesses alike.

The final draft of the GAO study is expected to go to Congress by next

week. A preliminary version circulating here for comment said if the automated mail sorting equipment now being delivered to USPS successfully reads the standard five-digit Zip Codes, it would be, at least for the Postal Service, economically and operationally sensible to go to the longer numbers.

In July 1981, the House of Representatives and the Senate delayed the Zip Code expansion until October 1983, pending delivery of the GAO findings. Last week, USPS spokesman Robert Becker said that next October the new equipment, if accepted and put on-line, "can and will be used to process Zip + 4 coded mail."

Becker added that implementation

depends on how Congress reacts to the GAO report. "We're not doing anything at all until Congress reviews this thing," he said. The first equipment deliveries began in October, according to Becker, and are now in acceptance testing. Contracts for the machines, destined for 118 postal facilities by mid-1984, were awarded to Burroughs Corp. and Pitney Bowes, Inc.

Business Interest Growing

He also said business interest in the longer codes continues to grow and there are several hundred firms that have used copies of the computer tapes of the nine-digit Zip Codes either to merge them into their files or to do the programming necessary

to convert once a decision is made on the postal program.

"A lot of [business acceptance] hinges on the proposed discount," he noted. The Postal Service board of governors, meeting this Wednesday, will consider a discount rate proposal for users of the nine-digit numbers.

It is too early to tell what the response will be in Congress to the GAO report, but the agency's findings seem to have answered several key questions of congressional opponents of the Zip + 4 program. For one, the USPS return on investment for its automation plans will be adequate if the new machinery operates as expected. If the equipment can read the five-digit Zips, it makes sense to begin sorting by the longer numbers, the GAO concluded.

One major reservation about the nine-digit Zip Code program has been removed by the delay on which Congress insisted, namely that the Postal Service was pushing acceptance of the longer numbers before it had proved the new equipment could read them efficiently enough to make the program successful. With implementation delayed until next October, the Postal Service will be able to determine the worth of the new equipment beforehand.

As long as the Postal Service keeps its promise to make the new Zip Code use voluntary and targets the programs at business users, the program should proceed as planned, according to observers here who read the GAO report as making it unlikely Congress will mount the drive to pass legislation needed to stop implementation.

A House Government Operations Committee aide said much depends on how USPS responds to the GAO findings and recommendations. "It's our hope the Postal Service reacts in a responsible manner," he said. The staffer said the report "has something in it for everyone," meaning that basically "we're back to where we were," — that is, the committee still wants a USPS commitment to implement the Zip + 4 program in an economical and efficient manner before giving it final approval.

Third Edition Out Of CP/M Index

SANTA MONICA, Calif. — The third edition of the Small Systems Group's CP/M Software Index is available from that firm.

The index lists 1,688 professionally supported programs offered by 507 vendors. A brief description, the vendor's name, address and phone number, the price and operating system versions are shown for each package. All of the indexed programs are available for the CP/M-80 operating system and many are also available under CP/M-86, MP/M-80, MP/M-86 and Concurrent CP/M-86.

It is organized into five major areas: systems programs, general applications, accounting applications, utility applications and industry specific software.

The index costs \$10 prepaid, \$14 outside North America, from Small Systems Group at Box 5429, Santa Monica, Calif. 904125.

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Most DSS Groups New Entities

DSS Not Just Another Name, Survey Reports

NEW YORK — Is "decision support system" (DSS) merely a new name for existing management information system (MIS) functions?

According to a recent survey of 24 firms, the answer to that question is "no."

A report on that survey by Halbrecht & Co., Inc., "Decision Support Systems in the Corporation," said that 16 (67%) of the DSS groups existing within the 24 firms were new entities that had not evolved from another function. Two of the firms' DSS groups had been transformed from Operations Research/Management Science (OR/MS), and six of the groups formerly had been DP/MIS functions.

According to Thomas J. Kubiak, president of Halbrecht & Co., a New York-based recruiting firm, 23 of the 24 firms that were surveyed last spring were Fortune 500 companies. They represented industries such as pharmaceutical, investment bank/brokerage, communications/entertainment, telecommunications, consumer product, electronics manufacturing, insurance/financial services and aerospace engineering.

DSS Defined

The surveyors defined DSS as "a function composed of professionals whose responsibility it is to deliver to nontechnical users the means to access data bases, perform financial

Data Duplication Saves Bank Files

MINNEAPOLIS — Off-site duplication of data paid off when a five-alarm blaze devastated the 16-story Northwestern Bank Building here last month.

Although the Thanksgiving night fire at the building, owned by Northwest Bancorporation, caused an estimated \$30 million in damage, it did not create any problems for the bank's data processing operations, according to Executive Vice-President of Operations Virgil Dissmeyer.

The bank's DP center and valuable records were spared because the DP operation is based in two different data centers, both located blocks away from the main building, which, along with a number of other businesses, was destroyed by the fire. Furthermore, nearly all of the bank's information exists in duplicate, to guard against incidents such as this, according to Dissmeyer.

"There was very little information kept in the main downtown building," a bank spokesman said. The bank did lose several terminals and an IBM System/34 minicomputer, which were quickly replaced by IBM. Northwest's secret to survival basically involves duplicating whatever operations and files that might impact the bank's business if suddenly lost. "We split the work load so that if we lost one of those [computer] sites we could still drive all of our on-line equipment from either center," Dissmeyer stated.

The cause of the fire is still unknown and under investigation.

modeling or write short, quick-response programs to ask "what if" questions on terminals or personal computers located at their desks." They noted that in a looser interpretation, this definition could include information center facilities and personal computer service centers.

In terms of reporting relationships, it appeared that data processing generally controlled the DSS function, the surveyors reported. Sixteen of the 24 firms (66%) reported through DP/MIS, five reported to a corporate officer unrelated to DP/MIS or OR/MS and only three were resident in and dedicated to a functional area. None of the 24 firms had

DSS groups reporting to OR/MS.

Most of the users of the DSS function were in the finance (16) and marketing (14) areas, according to the survey. Rated next highest in terms of users were the areas of manufacturing/production (9), human resources (8) and engineering/research and development (7).

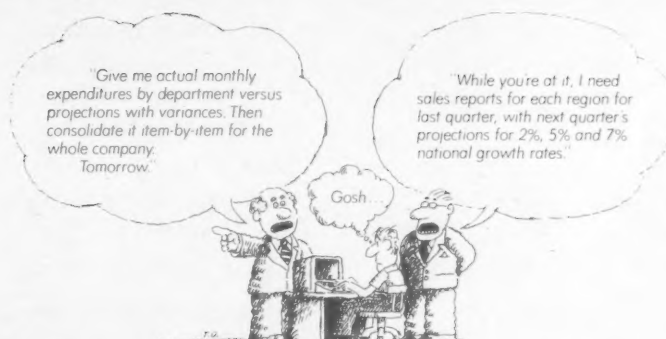
The DSS groups were staffed by one to 22 persons, averaging just over seven people, the surveyors reported. "As in management science, the field is dominated by a peer group with advanced degrees, although there is still the occasional B.S.-level professional." M.S. or MBA degrees (occasionally both) are held

by 36 of the DSS staff members; nine have B.S. degrees and four have Ph.D.s.

The majority of the DSS staffers (21) came from the applications systems development area. Another 11 came from software development or customer support within software vendors or time-sharing. Seven had line or functional experience within their companies and four came from MS groups in corporations. The balance came from academia (3) or directly from graduate school (3).

The survey results are available for a nominal fee of \$2 from Halbrecht & Co., Inc., 201 E. 42nd St., New York, N.Y. 10017.

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N.Y. Bar Offers Alternative DP Crime Statute

By Bob Johnson

CW New York Bureau

NEW YORK — The New York State Bar Association's Subcommittee on Computer Law, which recently rejected two computer crime bills pending before the New York State legislature [CW, Nov. 8], has now proposed an alternative statute.

A legislation report recently released by the subcommittee maps out a new bill that the authors say clears up some technical jargon and more accurately reflects just what a computer does and how the language of the law should be applied in this area.

Walter Klasson, an associate at the New York law firm of Brown, Rayman & Millstein who is the primary

author of the bill, said that the rationale behind the new proposal stems from his and his colleagues' desire to avoid the language that has continually clouded computer legislation.

"It looks as though the definitions in computer crime bills have been written by someone in the computer industry rather than by legislators who really need to understand things," he said.

The report states, "The proposed new article on 'unauthorized computer use' includes only three technical-type definitions [computer, computer data and computer program]." It further described the term computer as meaning computer operations, as opposed to functions, explaining that the former definition

better reflects, at a basic level, what a computer does.

Another section of the proposed statute deals with the definitions of behavior as applied to use of the computer and include the use of the computer and the use of a computer without authority. The latter definition, the report said, limits the application of the proposed statute to computers used in business, government and education and excludes computers used for hobbies, entertainment or other purely personal purposes.

The proposed legislation set forth by the subcommittee would amend the New York State penal law adding a new article, No. 186. This article would include the definitions of un-

authorized computer use and unauthorized use in the first, second and third degree.

Definition of Computer

The full definition of computer, according to the report, means "a device or group of devices which, pursuant to a computer program, can automatically perform arithmetic, logical, storage and retrieval operations with or on computer data and can communicate the result and includes any connected or directly related device, equipment or facility which enables the computer to store, retrieve or communicate to or from a person, another computer or another device the results of computer operations, computer programs or computer data."

Computer data, as defined in the report, means a representation of information operated on or communicated to or from a computer. A computer program is explained as a representation of one or more instructions in suitable form which can direct a computer to perform one or more operations.

The subcommittee's explanation of computer use states that a person uses a computer when he causes it to perform or to stop performing any operation. Using a computer without authority is defined as:

- When the computer is utilized in the operation of a building or in or by any business, profession, occupation or educational, research or government facility.

- A person knowingly and intentionally uses the computer when he has no right or authority to do so or any reasonable ground to believe that he has such right or authority, or when he has previously received reasonable written notice that he has no right or authority to do so, even if he does have right or authority to use the computer in some other manner.

To be guilty of unauthorized computer use in the third degree, which would carry misdemeanor charges, according to the report, a person would have to use it without authority. In the second degree, also a misdemeanor, a person would have to use the computer without authority and with intent to commit a misdemeanor crime. A first-degree charge, or felony, would require the person to use the computer without authority and with intent to commit a felony crime.

NEC Exec to Head Standards Group

NATICK, Mass. — Peter Graham Barratt of NEC Electronics U.S.A., Inc.'s Microcomputer Division has been selected as the new chairman of the Joint Electron Device Engineering Council Task Group 1, Static Random-Access Memory Committee.

Barratt is engineering manager for memories at NEC and has been with the company since 1976.

The charter of this task group is to create industrywide standards for X1 and X4 static random-access memories.

Additional information on the group's activities is available from Barratt at NEC, One Natick Executive Park, Natick, Mass. 01760.

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CW1282

Calls It Complex, Unusable

Lecht Calls for Withdrawal of Ada

By Lois Paul
CW Staff

NEW YORK — A call for the withdrawal of Ada as a standard was made here by Charles P. Lecht, president of Lecht Sciences, Inc. and former chairman of the board of Advanced Computer Techniques Corp.

His reason is that Ada will eventually suffer the same fate as another Pascal-derivative, Jovial, which previously was specified as the cross-compiler for U.S. Air Force (USAF) embedded weapons applications.

"The languages are unusable," Lecht explained. "They are too complex, and they are not in concert with the times."

Lecht addressed these topics in a presentation last week at the Second Standardization Conference hosted by the Air Force at Wright Patterson Air Force Base located in Dayton, Ohio.

"It is a point of view that needs expressing because, in honesty, they are wasting millions of dollars," he explained.

His feeling is that there already exists a preponderance of Pascal or Pascal-like chips. "Why do we want to teach them a new language when the whole scientific community is being brought up on Pascal?" Lecht asked, adding, "Even though Ada is a derivative of Pascal, it suffers the same ill effects that Jovial does."

Not the First Time

Last week's denouncement is not the first time Lecht has publicly criticized the Ada language, whose development is sponsored by the Department of Defense (DOD). He has been quoted in the past as having said, "Going from Cobol to Ada is like moving from Boston to New York to relieve big-city problems."

He admitted that the intentions of the DOD in using Jovial for embedded weapons applications were reasonable. These included minimizing assembly language programming and maintenance and discouraging proliferation of new higher order languages. However, his feeling is that Jovial did not accomplish these goals.

"No one could argue with the underlying reasons for wanting standards like Jovial, or what Jovial was supposed to be," Lecht maintained. "And not all Jovial events missed the mark. Jovial 3B's role in the F-16 and B-1 programs has been significant," he continued.

His major argument is that when Jovial was chosen, no one realized the swift changes that were to take place in computer technology.

"Crippled at the onset as a language wanting of definition, its subsequent history tells a tale of heroic struggle, by implementors and users alike, to conform to the USAF decision. Evolving to be an encyclopedic language, intended to be all things to all people, its complexity masks its usefulness. So does its size," he explained. "Except in erudite examples in some scientific journals, its usage is a dead giveaway to the Russians that an embedded weapons system is involved; nobody else uses it."

Ada is doomed to suffer the same

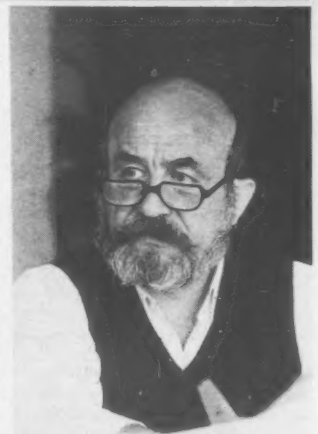
fate, according to Lecht. "Overly complex, oversized, it's another software development dream that will course the river of accelerated innovation out of its mainstream." Technology has undergone dramatic change since the Air Force directive recommended Jovial's use, Lecht said, but our standards selection methodology has not.

"The rate of announcements of breakthroughs in our technologies by the world scientific community and the meaningfulness of each is nothing short of astounding in the past five years," he explained. "It has brought us a widespread personal computer proliferation. Additional-

ly, communications improvements have virtually eliminated the practitioner's need to visit a computer, personal or otherwise, to obtain the powers it endows.

"Choosing standards which serve the intentions of governmental directives in today's swiftly changing technological climate is a more demanding task than it has ever been," he continued.

"There are so many hardware and software standards with which our government must be concerned. And the concern is one of legitimacy, nay, duty. One cannot help but empathize with those who must ultimately make the choices."



Charles Lecht

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Gatt Agreement Called 'Very Fuzzy'

U.S. Disappointed in Allies' Tech-Trade Pact

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Members of the U.S. delegation to the recent 88-nation trade talks in Geneva, Switzerland, said last week that they were keenly disappointed that America's trading partners did not agree to begin developing formal structures for high-technology and services trade.

These two areas of trade are high-priority items within the Reagan administration and Congress, where it was hoped the membership of the General Agreement on Tariffs and Trade (Gatt) would agree on work programs directed at eventually in-

cluding the two trade areas in the formal Gatt structure, the basic compact governing world trade of the U.S. and the 87 other signatories.

Although the communique produced by the Geneva meeting did commit the Gatt nations to reducing trade barriers and resisting protectionism — a commitment that was a major objective of the U.S. representatives — the meeting's participants could not agree on a high-technology work program and adopted a services program with exceedingly limited objectives.

Calling the services agreement "very, very fuzzy," William Brock, U.S. Trade Representative and head

of the U.S. delegation, remarked, "we said as little [in the communique] about services as you can say while still spelling the word right."

The communique "recommends" that countries interested in services examine the related issues, exchange whatever data they produce with other Gatt countries and then review the data at a planned 1984 Gatt meeting with an eye toward considering "whether any multilateral action in these matters is appropriate and desirable."

Speaking at a Nov. 30 symposium on trade sponsored by the American Enterprise Institute, a public policy research organization, Brock report-

ed that many nations, particularly in the developing world, indicated they would fight any formal consideration of services trade within the Gatt framework. These nations in general would like high technology and services, with its obvious importance to all countries, taken up in forums considered more sympathetic to the nondeveloped world, such as the United Nations.

He called that attitude "both shortsighted and dangerous" because services, such as data processing, banking and insurance, offer "the greatest growth opportunity to developing countries... Because of the combination of communications and electronics we can move these services anywhere in the world," Brock said.

Brock said the U.S. plan for a high-technology work program was torpedoed in a "childish" move by another delegation upset with American negotiating tactics at the meeting. However, he said, high technology was mentioned in the final meeting statement and is on the 1984 agenda.

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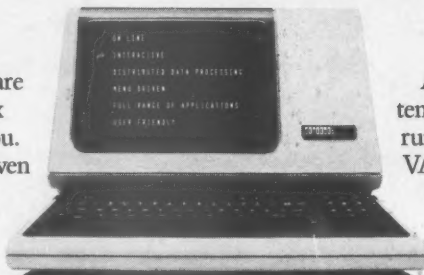
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Trade Rep Hits Gatt Proposal

The Reagan administration has been hoping the willingness of members of the General Agreement on Tariffs and Trade (Gatt) to take up services and high technology and commit themselves to free trade would send a positive signal to Congress.

At present, Congress is considering a number of protectionist measures, particularly aimed at protecting such U.S. manufacturing industries as automobiles and agriculture [CW, Nov. 22].

"Unfortunately, I'm not sure what was done in Geneva is going to affect many members [of Congress] very much," William Brock, U.S. Trade Representative and head of the U.S. delegation, said.

Addressing that topic, Sen. Robert Dole (R-Kan.), chairman of the Senate Finance Committee, at the recent American Enterprise Institute gathering said that protectionist sentiment on Capitol Hill will continue to grow, although he predicted no protectionist legislation will be enacted during the current lame duck session of Congress.

Like Brock, Dole expressed disappointment in the services trade work program approved in Geneva and noted that "not even this much could be agreed to on trade in high-technology products like computers, which are a strategic U.S. concern."

Despite the lack of success in these two areas, Brock tried to put as good a face on the Gatt communique as possible.

Noting the "very contentious" nature of the discussions, particularly concerning agriculture, which threatened to stymie the whole undertaking, Brock said the meeting "could have been a disaster. The avoidance of tragedy and at least a limited movement in the right direction is a really healthy sign," he said.



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 31 Manager/Supervisor Programming
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 42 Computer Operator
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Managers on the Move

RONALD L. BUTTERBAUGH has been elected vice-president of management information systems (MIS) of the Automotive Carrier Division of Ryder System, Inc. in Miami.

Butterbaugh joined Ryder's Automotive Carrier Division from The Budd Company in Troy, Mich., where he spent 10 years in MIS management. Before joining Budd, he was employed four years by Burlington Industries as a senior consultant in the company's Management Services Division. Before his stint with Burlington, he was a programmer/analyst for two years with National Cash Register Corp.

He holds a B.S. degree in mathematics from Manchester College in North Manchester, Ind. and an M.B.A. degree from Michigan State University. He is active in the Data Processing Management Association and the Society for Management Information Services.

JOSEPH K. BURMESTER has been named senior manager of data processing for Peat, Marwick, Mitchell & Co.'s Management Consulting Department in St. Louis, Mo.

Burmester formerly was senior vice-president of Capital American Life Insurance Co. in Cleveland and has been a data processing consultant for the past nine years.

He received a B.S. degree in business administration from Bowling Green State University and is a member of the Association for Systems



Ronald Butterbaugh

Management.

SUSAN MOORE and JAMES LOVE have been named to the corporate office of secretary and PETER J. DABOUL has been named an assistant secretary at The Hartford Insurance Group in Hartford, Conn.

Moore is director of the claim services division in the data processing department. She joined the management services division at The Hartford in 1969 where she worked on various accounting and management information systems. In 1980, she advanced to assistant director of information resource management and later that year transferred to claim services. In 1981, she advanced to assistant secretary and director of the

information resource management division.

She earned a master's degree from the University of Hartford.

Love is director of data resource management in the data processing department. He joined The Hartford in 1981 as a director of data base and consulting services. He has had 22 years of experience in the military in various management positions in systems development, computer operations and senior data processing

policy making.

Love earned an M.B.A. degree from the American University in Washington, D.C.

Daboul is a director in the information systems department. He joined The Hartford in 1981, having previously served in a management capacity at Combustion Engineering, Inc.

Daboul holds a master's degree from American International College, Springfield, Mass.

Call for Papers

NEW ZEALAND COMPUTER CONFERENCE '83, Wellington, New Zealand, Sept. 14-16.

Papers are invited for presentation. The theme of the conference is "Entering the Information Age." Paper topics of interest include coping with transition, managing the technology, protecting the individual and living with the computer. Papers on any of these or related topics are invited for presentation at the conference and publication of its proceedings.

Authors should submit abstracts of up to 200 words describing their paper before March 1. Authors whose papers are accepted will be notified and will be required to provide final copy by July 1 for inclusion in the conference proceedings. Submissions should be sent to The Chairman, Papers Committee, 8th New Zealand Computer Conference, P.O. Box 27-344, Wellington, New Zealand.

INTERNATIONAL MAGNETICS CONFERENCE (INTERMAG) '83, Philadelphia, Pa., April 5-8.

Intermag is calling for papers for its twenty-

first international conference. The purpose of the conference is to provide a forum for presentation of new developments in applied magnetism, related magnetic phenomena and information storage techniques. Contributed papers are solicited in all areas of applied magnetism, related magnetic phenomena and information storage technologies. Topics of interest in recent years have included all aspects of magnetic recording, various magnetic and other memory technologies, microwave magnetism, electronic transformers, permanent magnet materials and technologies, control and power conversion and conditioning, magnetometry and transducers, magnetic gradient separation, magnet field calculations and magnetic materials properties and processing.

Digests (two-page summaries that outline the work to be reported and include as many of the results as possible) must be received by Dec. 3 and a copyright form must be included. The inclusion of figures, tables and especially numerical results is strongly recommended. Submissions should be sent to Intermag '83, Suite 700, 1629 K St. N.W., Washington, D.C. 20006.

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March 7-9 Boston	February 14-18 Boston
Data Base Concepts & Systems	February 28-March 4 Seattle
February 15-17 Texas	March 14-18 Boston
Feb. 28-March 2 Boston	March 21-25 Texas
March 16-18 Philadelphia	Systems Design Workshop
Data Base Design	January 17-21 Boston
January 13-14 New Jersey	January 24-28 Philadelphia
March 10-11 Boston	February 28-March 4 Boston
Data Communication Concepts & Systems	March 14-18 Boston
February 8-10 Boston	March 28-April 1 Seattle
February 22-24 Seattle	Cost-Benefit Analysis for the Systems Professional
March 15-17 Philadelphia	January 24-26 New Jersey
Teleprocessing Network Design	January 31-Feb. 3 Philadelphia
January 18-20 Philadelphia	February 22-24 Boston
March 29-31 Boston	March 7-9 Seattle
Design of On-Line Systems	Project Management & Control
January 5-7 New Jersey	January 17-19 Boston
February 14-16 Philadelphia	January 19-21 Texas
March 16-18 Boston	February 14-16 Boston
Designing Systems Controls	March 21-23 Texas
January 12-14 New Jersey	Effective Presentations
March 28-30 Boston	March 10-11 Boston
Screen Design	March 15-16 Texas
March 1-3 Boston	Leadership: Managing and Influencing People
March 28-30 Philadelphia	January 29-28 Texas
Structured Techniques for Systems Analysis	March 15-17 Philadelphia
January 19-21 Philadelphia	DP Concepts for Non-DP Managers
March 28-30 Boston	February 17-18 Boston
Structured Programming: Techniques for Productivity	
February 28-March 3 Boston	
March 22-25 Boston	

Growth Prompted Conversion Builder Refinishes Data Base of Own 'House'

HOUSTON — The builder of almost 4,000 single-family detached homes last year recently turned its attention to an internal building effort that required different tools than hammers and saws: developing a data processing system that included data base management capabilities.

Its growth during the past nine years led General Homes here to implement data base technology, according to Donna Manley, project manager for the firm's first data base project. The firm serves 47 communities in Houston, Dallas, Tampa, Fla. and New Orleans. Its processing is done on an IBM 4341-2 located in Houston, utilizing remote IBM 3270 terminals in 11 locations. All input and printing, except for month-end closing, is handled interactively on-line at region and division offices which produce over a

quarter million checks per year on IBM 3262 and 3268 printers.

Since it was founded in 1973, General Homes evolved from handling records manually to using a service bureau to acquiring an IBM System/3 to begin batch processing in-house, Manley recalled. The firm then converted to a Hewlett-Packard Co. HP 3000 to implement on-line processing.

Need for Conversion

In early 1980, however, it became apparent that the HP 3000 could no longer support the company's business, she said. "The only alternatives at that time were installation of a second HP 3000 or switching to a vendor with a wider product line.

The decision was made to switch to the IBM 4300 series, and the company has now migrated through painless hardware conversions

from the IBM 4331-1 through the 4331-2 to the 4341-2, which is expected to support anticipated growth through 1985," Manley said.

The company's first task was to convert its HP 3000 to an IBM 4331. "We identified over 400 HP ASCII files which were converted to Ebcidic and merged to become 38 new Vsam files for IBM," Manley said. In addition, General Homes installed DOS/VSE, Vtam and CICS; purchased payroll and general ledger packages; and modified all other in-house programs. On-line programs, processed line-by-line on the HP 3000, were converted to CICS using full screens. "The bulk of these programs comprised our job cost system — primarily an accounting-oriented system used to post costs for jobs," she said.

The firm also had to convert its HP-based asynchronous ASCII transmission facilities to Ebcidic and IBM Systems Network Architecture and replace its 11 point-to-point data communications lines with three multidrop Synchronous Data Link Control lines servicing Greater Houston, Dallas, Tampa and Clearwater, Fla. and Slidell, La.

This conversion took about four months, and then the firm began to look at its future needs. General Homes formed a task force and began to gather information.

Manley said the task force was amazed at the redundancy of its programs and files. "Setting up a new subdivision required entries to four files, for example, and in most cases the user had to call on us for file maintenance, because he had no vehicle for entering the information."

They therefore began cataloging all file elements, cross-referencing them by program and file, and started a data dictionary list.

"It became apparent to us that we needed to look farther into the future and take all of our company's needs into consideration," she said. "An integrated, company-wide data base — one that we could start with the job cost project and could add to in a controlled fashion — was the answer."

For this they turned to IBM's DL/I data base management system. "Its compatibility with CICS, coupled with IBM support, made it our logical choice," Manley said. "None of our programmers had ever worked extensively with DL/I, but we felt that the learning curve would be minimal and were proven right."

The task force presented the proposed DL/I-based system to the company's president. They explained that it would allow them to track up-to-date costs and construction status of each job on-line. It would also give them the ability to be more autonomous and less dependent on DP for simple file maintenance.

The new system would use the full-screen concept, doing away with the former one-record-per-screen application. It was intended to provide flexibility and control in issuing purchase orders, strict editing in the accounts payable check-writer subsystem and more generalized data base inquiries for executives' ad hoc reporting,

based on an on-line data dictionary. The task force anticipated completion of the installation in nine months.

Manley said that General Homes added another IBM 4331-2 as the department grew. In July 1982 the firm upgraded to an IBM 4341-2, and its DOS/VSE system began running under VM/SP.

Currently, the firm is in the final implementation phase of the project. "The users' response to what already has been installed is quite favorable," Manley said. "Because the new system tracks so much data, this initial period is harder on the users, for they have to input a great deal of information to fully utilize the data base's long-term benefits."

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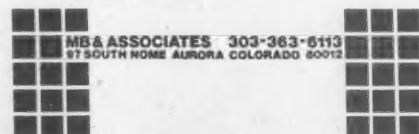
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Ford Ups In-House Graphics With CAD/CAM Features

DEARBORN, Mich. — In the attempt to produce more for less, Ford Motor Co. is expanding and converting its computer graphics systems to boost computer-aided design and manufacturing (CAD/CAM) capabilities over the course of a year.

The company selected Prime Computer, Inc. minicomputers to handle its automotive CAD/CAM functions. Ed Breyer, manager of Ford's Car Engineering Computer Graphics Department, explained why: "By converting to Prime computers, we can drive two graphics terminals per computer, not just one, and still stay committed to our philosophy of independent workstations.

"The conversion also eliminates the need to transfer computer tapes physically from one area to another by allowing electronic information transfer between centralized data collectors," Breyer continued.

"This will help us reach our goal of performing over 90% of all design engineering on graphics systems by the mid-1980s," according to Breyer.

Prime's Primos operating software also simplified the task of constructing a unified data base and achieving the communications needed for management information systems associated with CAD/CAM, according to Breyer.

Ford is using Prime's Model 250-II system to drive its graphics terminals; these in turn communicate with a Prime Model 550-II and Model 750, he said.

Breyer said computer graphics permeate every phase of automotive design, engineering and manufacturing at Ford. Graphics systems are used by all designers and engineers to create and analyze components,

vehicle systems and tooling aids, he said.

"Entire vehicles can be graphically assembled," Breyer remarked, "so that engineerings can verify component clearances, assure the integrity of the design theme and simulate many operating characteristics."

This translates into faster and more efficient product design, Breyer said.

"We have found that graphics increases the productivity of skilled design engineers by at least a factor of three," Breyer claimed. "At the same time, the quality and accuracy of designs are improved," he concluded.

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AVON, Conn. — "The IBM Personal Computer Primer Series" is the name of a self-study, computer-aided instruction (CAI) course from Computer Systems Research, Inc. (CSR), which is said to teach people to use the IBM Personal Computer more effectively.

This package is intended for professional people, small business managers and corporate executives with or without former data processing knowledge.

It consists of six self-paced learning modules: "Major System Components," "Using the Keyboard of the IBM Personal Computer," "Basic Computer Concepts," "Using the Basic Computer Language," "The Disk Operating System" and "Problem Determination."

In addition to the six CAI modules, the package includes a 143-page workbook and reference check list of the steps that are to be followed for using the courses on the Personal Computer.

The training program is priced at \$150/module. Further information can be obtained from CSR at Avon Park S., 40 Darling Drive, Avon, Conn. 06001.

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Without Major Systems Overhaul Center Developer Updates Output With Laser

INDIANAPOLIS — Better quality printing and faster throughput may not be a major objective at every company, but they were important to a national shopping center developer here when looking for new output options.

Melvin Simon & Associates' main worry was to update its output without undergoing a major systems

overhaul, according to Jim McKee, systems manager at the company.

The firm sends letter-size financial statements to mortgage holders, investors, tenants and other members of its business network. It needed the letter-quality printing to match.

Printout from the Digital Equipment Corp. LP 05 im-

compact printer had to be reduced to an 8½ in. by 11-in. letter-size format by the photocopy machine, McKee explained. About 5,000 documents monthly were handled in this fashion.

"The procedure was time-consuming, and results were not letter-quality," said McKee. That's when the company switched to an IBM

laser printer for use with its DEC PDP-11/70 minicomputer.

A Datalynx/3780 protocol convertor made by Local Data Co. of Torrance, Calif., made this possible, McKee said. The device converted the Ebcidic code and binary synchronous format of the IBM laser printer into the Ascii code and asynchronous

format of the host computer. No major additional investment was necessary to get the PDP-11/70 to drive the IBM laser printer, because the convertor only cost \$1,750, McKee added.

One I/O port of the Datalynx is dedicated to bisynchronous communications with the printer, and another provides asynchronous communications with the computer, McKee explained. An additional Ascii I/O port is available for a terminal or other device, but is not currently needed by Melvin Simon & Associates, McKee noted.

IBM Host Look-Alike

Thus, the Datalynx makes the PDP-11 look like an IBM host, and other IBM peripherals can be used with the system.

The Datalynx/3780 features a built-in synchronous modem eliminator, which reportedly allows up to a 100-foot connection between the laser printer and the Datalynx without the use of expensive synchronous modems, McKee remarked.

The Datalynx protocol convertor also offers the advantage of off-loading the bisynchronous emulation task onto a built-in microprocessor, speeding system output. If the DEC interface is used, protocol and code conversions are performed by the computer software.

Since the IBM bisynchronous protocol has a strict line timing requirement that must be met by the computer, output is greatly reduced, McKee concluded.



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The MPC 1200 series are ANSI 3.64 video display terminals. The 1200 fully emulates the DEC™ VT/131 & VT/132. The MPC 1250 is completely compatible with DEC™ VT/125 architecture, accepting all REGIS™ software commands to produce superior bit-map graphics.

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Twelve-Month Program

MIT Offers Degree in Technology Management

CAMBRIDGE, Mass. — MIT is offering a 12-month program — said to be the first in the nation — leading to a master of science degree in the management of technology.

Initiated in 1981, the program is conducted jointly by the Alfred P. Sloan School of Management and the School of Engineering. The effort is "a direct response to the growing worldwide demand of industry and government for managers who can help bring advances in technology to the marketplace in the form of new products and manufacturing processes," according to the program brochure.

The program "has been designed

specifically for technical professionals with at least five years of work experience who see the next stage in their careers involving increasing managerial responsibilities for the technology-based organization," Edward B. Roberts, director of the program, explained.

"To manage effectively, these individuals need more than an in-depth scientific or engineering education and on-the-job experience," according to the brochure.

"They also must possess substantial managerial knowledge in planning and controlling technical projects, directing engineering design and product quality, inspiring and

developing professional technical employees and integrating with the marketing and manufacturing functions of the organization," the brochure continued.

Three Terms

Beginning in June each year, the program comprises three seasonal terms. The summer term includes: Applied Microeconomics and Macroeconomics, Statistics for Management, Decision Models for Management, Financial and Management Accounting and Introduction to Computer Programming and Information Systems.

The fall term includes: Technical

Problem Solving and Communications, Technology Planning, Cases and Projects in Engineering Management, Government and the Management of Technology and a choice of electives.

The spring term includes: Marketing/Technology Interface, Manufacturing/Technology Interface, a choice of electives and research for the thesis required by degree candidates.

In the first two years of the program, MIT enrolled less than 10 students per year to allow for a developmental period. Next year the program will start expansion to its expected eventual size of 40 to 50 students per year, Roberts said.

Candidates must meet the following requirements: an undergraduate degree in science or engineering, five to 10 years of experience in industry or government as a practicing engineer or scientist and completion of formal courses in differential and integral calculus and in macroeconomic and microeconomic theory.

Tuition for the 1982-83 program is \$16,600, a figure that is expected to rise, according to the brochure. The MIT program has no fellowship funds available or teaching or research assistant grants.

More information is available from MIT, MIT Program in the Management of Technology, Room E52-533, 77 Massachusetts Ave., Cambridge, Mass. 02139.

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Aid Helps Deaf Communicate

VIENNA, Va. — British Telecom has launched a communications project utilizing an electronic mail system supplied by GTE Telenet Communications Corp. that reportedly enables deaf people to communicate with electronic mail via data terminals.

Known as Visicom, the British system is modeled after its U.S. equivalent called Deafnet, which for the first time allowed deaf people to use the telephone to communicate.

Participants use data terminals equipped with acoustic couplers or modems to access an electronic mail system host computer by dialing into a GTE Telenet-furnished packet-switching network.

Besides individual electronic mailboxes, the Deafnet and Visicom systems include special news and information bulletin boards targeted for deaf audiences, according to a GTE spokeswoman.

Visicom will test the suitability and popularity of the newly implemented system, as well as PSS-Mail, which is the British electronic messaging system that is supplied by GTE Telenet.

This project is being cosponsored and subsidized by the Breakthrough Trust and the Project Ear Foundation of London, as well as GTE Corp., which is based here.

Further details on the communications project are available from GTE at 8229 Boone Blvd., Vienna, Va. 22180.

The Benchmark in World Class Computers

Medical Insurer Cuts Costs, Saves Time With System

COLUMBUS, Ohio — Faced with a limited budget for CPU expansion and computer demand that would not slow down, a medical insurance company here has installed a data center management system (DCMS) to cut costs, save time and defer expensive CPU upgrades.

Despite a recent upgrade to an IBM 3033 Model U12, Ohio Medical Indemnity Mutual (Omim), the state's Blue Shield insurer, found itself with a shortage of processing power in late 1980.

The most visible problem was long runtimes. The nightly allowance of 15 hours for batch runs was proving inadequate, forcing 700 terminal operators to sit idle for a half hour or more while the machine finished its run, according to Dennis Seinhart, data center director.

Scheduling Solution

The solution was more efficient scheduling, not more hardware, Seinhart decided. Omim set about evaluating production control packages.

Since 1975, the company had been using the System III stand-alone scheduling package made by Value Computing, Inc. (VCI) of Cherry Hill, N.J. After researching the market, they decided to upgrade to VCI's DCMS.

"We looked at another package," said Sam Dellipoala, manager of production control. "It looked very similar to DCMS, but it couldn't really schedule," he said.

"There are 20 to 30 decision points in the schedule," which, if not handled properly, can wreak havoc on predecessor/successor relationships, he said. "That sort of analysis is well within the power of DCMS."

Dellipoala said his evaluation

team prepared conservative first-year savings estimates for management. Cost reductions of \$110,000 were expected, primarily from the use of the DCMS automatic job submission component, which was said to be capable of submitting three times as many jobs as an operator, and a reduction in unnecessary returns caused by out-of-sequence jobs.

However, actual savings from the conversion approached \$140,000 the first year, Dellipoala said. And the system was fully installed, without the need for a systems programmer, in less than three months.

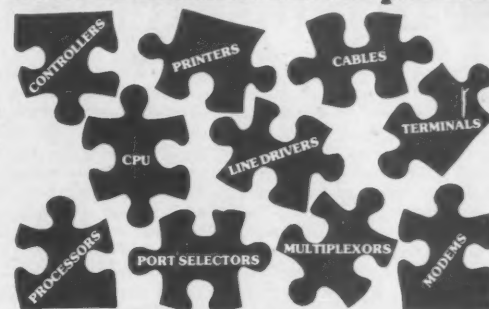
In fact, the most assistance the Omim production control analyst required was in determining the most efficient critical path for the new nightly schedule, Dellipoala said. That information was available by phone from VCI, after which the production control analyst was able to "complete installation without a hitch."

With the data base rebuilt, Omim used automatic job submission to phase in a regular batch work load, starting with 25 jobs and working up to the 200 or more nightly jobs that comprise the bulk of Omim's regular batch work load.

The results were immediate, Dellipoala said. The nightly run of scheduled jobs achieved earlier end times. Despite growth in claims processing, an average of nearly two hours' processing time was shaved off the nightly scheduled run, according to Dellipoala.

In all, the nightly schedule runtime was reduced from 15 hours to 13½ hours. "When management saw two hours saved on each nightly run," Dellipoala said, "they saw the chance to defer the addition of more processing capacity."

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Adult Leukemia Center

Research Institute Saves Time With DBMS

SEATTLE — The Fred Hutchinson Cancer Research Center here, a pioneer in bone marrow transplantation, has to deal efficiently with 173,000 data records distributed over 58 different files for 1,600 patients.

Approximately 200 transplants for hematologic malignancies are performed each year in six geographically dispersed hospitals in the Seattle area. How does the center's Adult Leukemia Center (ALC) keep track of it all? For the past five years,

ALC has used Scientific Information Retrieval/Data Base Management System (SIR/DBMS) from SIR, Inc. of Evanston, Ill.

Records are maintained on the center's Control Data Corp. 6400 and Cyber 70 computers. Each patient is initially registered and randomized into a primary treatment protocol depending on the type and status of the malignancy, according to biostatistician Nancy Flournoy.

The patient is further ran-

domized into additional protocols when common complications occur. All patients are followed for life. "In addition to treatment protocols, there are numerous longitudinal laboratory and observational studies of immune competence, hematologic recovery and diagnostic refinement," Flournoy explained.

"These studies, as well as the treatment protocols, have distinct and finite lifetimes that dictate a constant turnover in the data elements required for the analysis of current research," she added.

"Thus, our work evolves through a dynamic mix of parallel and serial investigations," Flournoy added. "SIR/DBMS facilitates the maintenance of these dynamically changing data sets, while eliminating the redundancy in data collection, key entry and computer management which would be required if each study were treated independently."

Maintenance Procedures

Furthermore, the data maintenance procedures for adding, updating and deleting data elements in the data base are identical for all studies, she said. "Simply coordinating these procedures has allowed us to increase the number of studies without substantially increasing the time our programmer spends maintaining current data for these studies," Flournoy added.

"The ease and flexibility of data retrievals using SIR/DBMS have permitted us to pattern our data collection, coding and key entry procedures after the actual processes with which the data is generated with little regard to its ultimate usage," she explained. A test may be discontinued or modified without affecting any other data management activity at the ALC.

In 1975, ALC maintained only six record types instead of the current 58. Some record types have information collected only once for each patient, some collected only on subsets of patients and some collected daily for months with sporadic long-term follow-ups.

"The increase has not required an increase in data collection or key entry personnel because laboratory and department personnel have assumed responsibility for data input," Flournoy said.

Since the diagnosis of complications requires a physician's judgment, a separate record is designed for

each complication. The physician responsible for treating the complication codes and enters the diagnostic information.

A typical retrieval is written in skeleton SIR code by the statistician with refinement and file manipulation added by the programmer, Flournoy explained. "This process provides a double check for accuracy and method in complex retrievals as both the statistician and programmer are familiar with the extensive list of data defini-

tions as well as the desired application of the researcher."

Another important time-saver for ALC's application programmer is the facility to create statistical packages system files with a single command. "Freedom from format statements and the need to repeat the key entry of missing values, variables and value definitions immediately cleared 50% of our application programmer's time for other assignments," she concluded.

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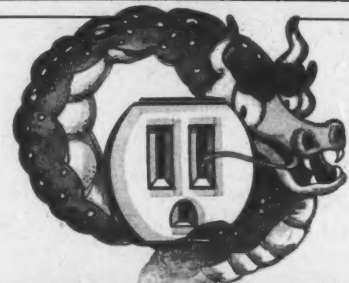
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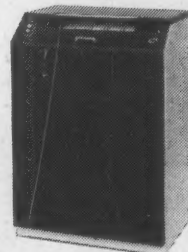
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Integrated DP/WP System Cuts School District's Costs

HUNTINGTON BEACH, Calif. — A high school district here is saving time and cutting costs with an integrated word and data processing system that not only handles the word processing for area high schools, but is used in class to teach word processing to career-bound students.

Six high schools with about 20,000 students make up the Huntington Beach Union High School District. In addition, there are about 50,000 to 60,000 students in the district's feeder elementary schools. Two mainframes handle computer-based instruction and process administrative data and student records. For word processing, the district office and the

schools rely on stand-alone systems.

"Each school would get their own word processing system," recalled DP manager Joe Mona. The district had various types of magnetic card and other word processing devices. "These were not shared-logic word processors — they couldn't talk to each other, let alone to our administrative computer systems," he said.

Offices that needed information from the administrative data bases had to install separate data processing terminals. "We decided to put a stop to this," Mona said. "We wanted a truly integrated word processing and data processing system."

The district settled on a system based on a Wang Laboratories, Inc. VS computer because, "it was the only one on the market that really had enough vision to see the need to link the functions that we felt had to be combined — having articulated word processing stations that can also function as remote IBM terminals and having the ability to centrally distribute information through electronic mail," according to Glen H. Dysinger, assistant superintendent for planning, research and negotiations.

The district's Wang system consists of a CPU with 256K bytes of memory and a 90M-byte disk drive. The environment includes six printers and 18 CRT terminals with word and data processing capabilities, and IBM 3270 communications software links the VS to the district's host computers.

Definitely Cost Savings

All district correspondence, manuals and reports, as well as board agendas and minutes, are processed on the Wang system.

"It is definitely cost savings," Mona said. "One of the high schools in the district did a study. They said that each workstation is the same as 1.8 secretaries."

Through 3270 software and additional programming written by Mona's staff, the VS workstations also function as terminals of the district's host computers. "Previously, the various departments that needed access to our data bases would have had to order an IBM terminal," Mona said. "Now, we don't need that duplication. One CRT [terminal] can serve both purposes. We save money in that respect, and it gives five more people the ability to access information."

The district is also taking an innovative approach to word processing training. In the six high schools, the district and the California Regional Occupational Program have installed five Wang System 25 word processors and an Office Information System/125 for classroom and administrative use. The students who are training on the Wang systems aren't just working on practice texts, according to Mona.

Under the supervision of an instructor and a member of the administrative staff, they type actual correspondence and keyboard manuals and other texts. "They working on live data. That's part of the training," Mona said.

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Aircraft Parts Firm Flying High With DBMS

DALLAS — It wouldn't be too far away from the truth to describe Aviall's business as being consistently "up in the air." After all, as an aircraft parts and services company with three divisions and distribution channels all over the country, the firm is responsible for keeping a lot of airplanes high in the sky.

To manage this high-flying business, the company, based here, is using a data base management system (DBMS) that helps with the demands of its on-line computer environment.

All information systems at Aviall, which was formed last December, are supported by an IBM 3031 mainframe system running under OS/VS1. The company uses the Series 80 Total DBMS and Environ/1 data communications monitor and task management systems from Cincom Systems, Inc., according to Roger Hanna, vice-president of management information systems.

About 200 Total files are stored in 7.5G bytes of disk storage, Hanna said. The company has 300 Four Phase Computer Systems, Inc. 5115-A keyboard/display terminals installed throughout its national network, as well as about 115 45-char./sec printers.

Aviall's distribution division, based in Dallas, serves 37 branch offices, which supply a full range of aircraft parts. A branch communications system provides automated on-line order entry, purchasing and inventory control running under Environ/1, Hanna said. The system uses five trunk lines with six to eight drops each and supports remote data communications via 3270-type, 9,600-bit/sec Codex Corp. modems.

The centralized data base offers complete visibility from any office of inventory, order status and order and transaction volumes, Hanna noted. If necessary, a branch location can search the inventory at the central warehouse in Dallas and at all

other branches to find a part.

With inventory visible from anywhere in the country, Aviall can open a new branch with only a salesman, a terminal, printer and telephone line, Hanna claimed. Since 24-hour delivery of critical items is guaranteed from the central warehouse, little inventory is needed.

In the company's General

Aviation Division, DBMS applications have been developed to provide inventory control and work-in-progress information for engine overhaul and repair. The engines are dismantled, their parts gauged, and then they are reassembled and stress-tested. Parts are logged in via work-in-progress, and when repair and tests are complet-

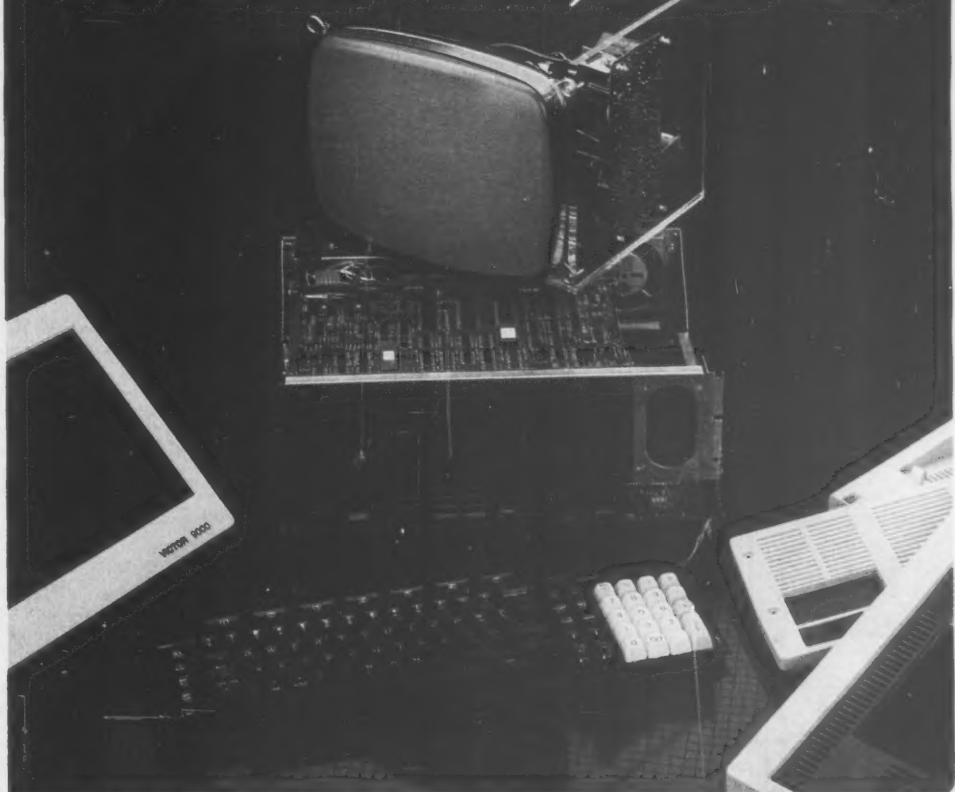
ed, the system prints reports detailing all labor and material expended on the job. The reports are then used for billing, Hanna said.

An on-line inventory availability/interchange system enables a shop floor inspector to order required parts immediately. The system has also made it possible for customers to exchange or

lease equipment while their engines are down for repairs, Hanna maintained.

For the Airline/Industrial Division, the company uses an engine status system to track the flight time on each engine. The system also keeps track of performance by analyzing indicators logged by pilots on each flight.

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User Language Key

Mortgage Insurer Uses DBMS to Extract Data

MILWAUKEE — A private mortgage insurer here had the right data about investors. Just out of reach, however, was the means to extract from that data important marketing information such as which investors were increasing and which were reducing their business.

This was the problem facing Mortgage Guarantee Insurance Co. (MGIC). The proposed solution was a data base management system (DBMS). The firm began a full search that concentrated on Cullinane Database Systems, Inc.'s IDMS, Software AG's Adabas and Computer Corp. of America's Model 204.

According to Tom Pfaffl, the in-

surance company's project manager, "IDMS was rejected due to the inflexibility of its data structures and inadequate user language. Model 204 DBMS was preferred to Adabas primarily because its User Language, which MGIC wanted to use as a development tool, was better designed and integrated into the product."

User Language Working Out

Since the installation of Model 204 at MGIC, its User Language has been working out well, Pfaffl said. "We can train people fast in User Language. They are productive in only two to three weeks for simple report-type procedures, and they can also

write on-line data entry-type programs. That's much better than writing programs for [IBM's] CICS.

"In the first year of using Model 204 DBMS, we wrote about 100 programs, 50% of which are on-line. If I were still using Cobol, we could only have done about 40% of these," Pfaffl said.

Although User Language still is retained within the DP department, its use is not restricted to programmers, he continued. Systems analysts without programming experience are writing on-line programs. "All User Language requires is a logical mind, no heavy technical knowledge," he said.

MGIC is running Model 204 on its Amdahl Corp. V5 system, which currently is accessed by 250 terminals. As more offices come on-line, Pfaffl said he expects the number of terminals to double. About 30 Model 204 files are on-line, he said, with the largest being the sales contact file, which contains 140,000 records.

One of the firm's three major application areas is the salesman reporting system that gathers data on customers visited. Pfaffl explained that this information is analyzed to provide information such as the number of visits to chief executive officers, an expense analysis and whether certain people have been missed.

The second application involves placement of CRT terminals in the offices of those who buy and sell loans. The types of businesses done by these lenders is analyzed so a "package" of loans can be matched against the requirements of particular purchasers or sellers. Pfaffl said the lenders can input a list of criteria through the CRT terminal and get a list of available packages. They can then inspect specific packages in detail and make their decisions.

The third application is the mortgage-backed security system. Pfaffl explained that when a bond is issued, it typically is backed by a pool of mortgages that MGIC insures. This is accomplished by bringing together parcels of loans from many small lenders to sell to one big one who will then issue the bond. A substantial amount of analysis is required to meet the criteria of the bond-issuing organization, according to Pfaffl. "For example, the organization may require that 10% of the loans be less than \$50,000, or that 20% must be on urban one-family homes."

The day is approaching for the bond to be issued to accommodate the shifting demands, and Model 204's User Language is being employed to produce statistics and make modifications to the offered loan package, he said.

"It sounds strange, but Model 204 DBMS almost makes things too easy," Pfaffl said. "Users quickly realize how much they can do and could easily skip important design steps if proper controls weren't in place," he said. Among the controls at MGIC is the Model 204 security system, which is used to restrict certain users to certain transaction types.

According to Pfaffl, MGIC's use of Model 204 has enabled the company to expand its business services and, as a result, to maintain its competitive business at a time when loan business is hard to find.

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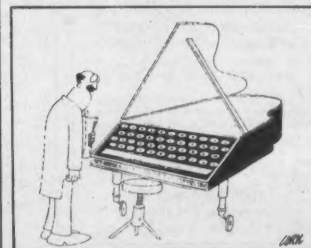
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Distributor Boosts Output With Change Control

By Robert Batt

CW West Coast Bureau

LOS ANGELES — Carnation Co., a major distributor of dairy products based here, has a novel solution for a very old problem — software productivity.

Carnation uses an IBM 4341 running under the DOS/VSE operating environment with Interactive Computing Control Facility (ICCF) program development tools. The company found that because of the lack of change tracking in ICCF, it should not allow its programmers to use the ICCF full-screen editor to change its production programs interactively.

One of the primary reasons for this was the concern of internal auditors over unauthorized and uncontrolled change to production programs. This resulted in discontented programmers and reduced productivity gains that the company could hope to make in the ICCF environment.

"We were concerned about unauthorized change control. With the proliferation of computers throughout the company, the requirements for tight change control have increased significantly in the last few years, and yet with the IBM tools we currently have, there is no audit trail," explained Per Kamsvaag, director of management information systems (MIS) at Carnation.

To resolve this situation, Kamsvaag acquired a product known as Delta, a system change integration facility manufactured by System Software Services, a software house based in Oslo, Norway, with distributors in the U.S.

The Delta system was designed to bring about improved change control and change integration of software running on IBM 370-compatible computers. It is primarily intended for use on application programs.

Delta was also designed to solve problems caused by widespread use of interactive full-screen editing systems, where changes to programs are not explicitly shown. The Delta system reportedly will document the exact difference between a new modified set of source code and the original set. The documentation has a format similar to reports from batch-oriented program library maintenance systems.

Vault Concept

"By using this feature a company can implement the 'vault concept' for its production program library so that any change coming into the library is documented. The aggregate change log for a program can be stored within the vault, thus ensuring that program changes can be tracked and audited," system inventor Havard Husum explained.

This was exactly what Carnation needed. Essentially the data processing staff wanted to be able to monitor changes in the production version of programs to ensure that they were in line with authorized changes. Prior to Delta, the dairy producer was only able to monitor such changes in batch mode through the use of Maint — IBM's library maintenance system.

"Delta allows us to do the things

in an on-line environment using ICCF, which previously we could only do in a batch mode environment. It allows us to use ICCF, not only for the development of new programs, but also for program maintenance. This had previously not been possible using ICCF," added Kamsvaag.

The MIS director claimed Delta had led to increased programmer productivity. The facility is used to generate reports on changes made, document and relate them to their original authorization. "Delta allows you to get a very intelligent report about real changes in programs, and its computational power is very efficient so that overhead costs are low," he added.

Thousands of lines of source code can be processed in one CPU second on the 4331, according to the vendor. This is achieved through an algorithm that reportedly performs a complete structural analysis of the source code using a minimal number of comparisons.

Kamsvaag said Delta was chosen because it had few rivals on the market and these performed a more limited compare function based on a sequential approach. Carnation now plans to use Delta to automate the integration of numerous modifications currently being made to its Management Science America, Inc. payroll system so as to avoid repetitive cost and time expenditures.

Husum claimed the Delta system

also solves problems associated with the implementation of new versions of standard application packages to which the user has added his own modifications. The integration of these custom changes into the enhanced version can be a huge task, he asserted, particularly if the programmer who made the original changes is no longer with the firm.

Delta, he claimed, automatically creates a new set of source code integrating existing user modifications into the enhanced version of the package.

Apart from DOS/VSE, Delta can currently run in a VM/CMS environment. Versions for OS/VSI and OS/MVS are expected to be released in the first quarter of 1983.

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For LSI-11/23 Q-BUS: 80 MB Fixed Emulates DEC RM03

For PDP-11/04-60 UNIBUS: 32 MB Fixed Emulates Two DEC RM05s

For PDP-11/70 CACHE BUS: 80 MB Fixed Emulates Two DEC RM05s

For VAX-11/750 CMI: 80 MB Fixed Emulates DEC RM03

For LSI-11/23 Q-BUS: 160 MB Fixed Emulates Two DEC RM03s

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Micros Undermining MIS Control Consultant Sees DP Mystique Disappearing

By Robert Batt

CW West Coast Bureau

LOS ANGELES — Personal computers will radically alter the relationship between the management information system (MIS) department and its end users, according to Chuck Tesler from VM-CMS Consulting Services.

"Many more personal computers are coming, and the mystique of computing, which was an intentional fabrication on the part of DP professionals, will disappear," the former IBM systems engineer said.

Tesler argued that growing user awareness of DP shortcomings will lead to a significant loss of control

for MIS departments. "Why should a user go to MIS for the privilege of being treated abruptly, subjected to delays and put his own productivity — and perhaps job — at risk when he can go to Computerland [store] and come back the same afternoon with a cheaper packaged solution?" he asked.

Move to Micros

The move to microcomputers is no longer under the control of the MIS department, according to the consultant who is also chief executive officer of Prosoft, a Hollywood-based microcomputer firm. Personal computers cost a fraction of the cost of a mainframe. A company does not take any risk or need to justify heavy investments by turning to personal computers.

"With 100 users on a 3081, a four-second delay is considered normal in local mode; 15 seconds for remote locations. With a personal computer you hit a key and you have the information. You are not subject to the schedules and vagaries of other users or the MIS department's list of priorities."

User department heads, he claimed, will gain much more power vis-a-vis their DP counterparts. If a microcomputer breaks down, they simply go out and buy a backup for under \$3,000. The only thing currently holding them back, he asserted, is a lack of software.

Tesler argued that with the advent of the personal computer, one of the major reasons for mainframes has disappeared — namely the need to split the cost of computing among many users. While there is still a role for mainframes, he said, it will now be confined to large applications requiring high-speeds, such as the management of very large data bases.

The tools of computing are available and affordable now, he said, and users will stop putting in requests to MIS as soon as they find they can apply the solution themselves.

Economic Sanctions Lifted

"There are no longer any economic sanctions against the user computing in any way he wants to do it. Now, for under \$3,000, people can buy a fine computer that in turn opens up the trade of computing to anyone who wants to give it a try."

"Computers are becoming a retail market item, which traditionally they have never been. The people who have the problems and the need for solutions are doing it themselves, and it is no longer acceptable to senior managers to wait two to three years to get their applications up and running," Tesler said.

In the face of these developments, he argued, DP managers should take the time to determine for themselves what micros can do and how rapidly the field is moving. There will be an ongoing, but clearly diminished role for mainframes, he asserted. In fact, he predicted by 1990 the dollar amount associated with personal computers would exceed that of the mainframe market.

DP managers in large corporations should, therefore, be attempting to

position their companies to make the best combination of micros and mainframes. As time goes on, he argued, such distinctions between equipment would actually disappear.

MIS departments should now also place a high priority on training their people to be competent in the use of micros, said Tesler. He warned the new technology would result in less jobs in many MIS departments. "DP managers, in particular, have an opportunity to get into the mainstream of their companies. Their expertise in DP could be invaluable in developing the business of their companies," the consultant explained.

Despite these opportunities, however, Tesler predicted that most DPs will keep their heads in the sand and discard the growth of personal computers. Where some adjustments are being made, he asserted, it is often half-hearted as with, for example, the concept of the information center.

"Many are setting up information centers in which they keep control over their users. They will not continue to get away with that. When in response to a user request the MIS departments answers it will take up to a year, the user will simply go to the retail store and set up his own system."

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Will Programmers Be Obsolete?

Q The recent and enthusiastic interest in end-user computing, information centers and user-friendly languages has made me a little concerned for my future, as well as that of thousands of other application programmers.

If only half the predictions come true, many of us will end the decade doing maintenance on batch applications that are too costly, complicated or trivial to convert, or else we'll be out of jobs.

I'm not trying to start a campaign to abolish end-user computing, but can you suggest any areas of study or work that might help the applications programmers continue to be valuable to their employers? In other words, how do we keep our jobs?

A Although it might compound your concern, I would be remiss if I did not remind you of the more universal applicability, availability and acceptance of proprietary software packages. The trend to greater end-user involvement and to packaged software is evident.

Unless we as an industry reach a stalemate on imagination and innovation, applications programmers will be in considerable demand for some time to come. Look, however, for programmers and systems analysts to migrate to the functional areas as processing capability, data and people are distributed throughout the organization.

Q I have been in programming for five years and am on my third job. My next move is an important one. I would like a state-of-the-art environment with good management, colleagues who are friendly and confident in their ability and so on.

I have been in nearly 50 interviews since entering the field and find most places disorganized just from the interview. I know there are programmers who have stayed at companies for 10 or more years, but I just can't seem to find this type of company.

Employment agencies think I am too choosy and don't work hard for me after I reject an interview or turn down an offer.

Is this all there is or should I continue my search?

A You are picky — the probability of not finding an acceptable match in 50 tries is exceedingly small.

Every company in the world has its less-than-desirable attributes (e.g., bad management, personality conflicts, antiquated hardware). As a prospective "buyer," you must weigh the good against the bad (and there will always be the bad).

People who have been with a company in DP for 10 or more years fall into two categories: those who have found opportunity and are realizing their potential and those who lack ambition and/or talent. A small turnover rate is not necessarily indicative of the company's desirability as an employer.

It has always amazed me how a company will spend up to \$4,000 to get a high-potential prospect in for

an on-site interview, then treat his visit as an afterthought. However, you should be prepared, even when they are not. Make sure that the interviewers give an acceptable response to all reasonable inquiries.

There are some diamonds in the rough. You may have to peer through that initial impression of disorganization to find them.

Q I have three college degrees, all in fine arts. For the past 10 years I have been a purchasing agent with direct responsibility for the specifications, bidding, contracting and purchasing of data and word processing equipment.

I have been exposed to a wealth

of information about the various DP and word processing products and services. I do not have the skills for, nor can I see myself in, any of the standard DP job categories.

Does this experience allow me any entry into DP?

A Larger companies are continuously interacting with vendors and purchasing hardware and software. Because of this, a new position is evolving within the information services function. This position has responsibility for vendor interaction and coordination of hardware/software evaluation and selection.

Such positions are normally filled from within; therefore, if you are in-

Turnaround Time By Larry E. Long

terested, you'll have to let people know of your interest and availability.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.

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Moves Toward Efficiency

Cache Disk System Speeds Access for Power Firm

KANSAS CITY, Kan. — Bottlenecks at the processor level continually frustrated users at Kansas City Power & Light Co. (KCP&L) here, who needed daily access to the utility's mainframe.

"Because of slow access speeds and limited memory capacity, it had gotten to the point where we needed to handle I/O in a more effi-

cient manner," recalled Doug Morgan, director of computer services at the company. Users would be poised at terminals as they waited to tap the Sperry Univac 1100/82's resources.

The medium-size utility has six plants and 350,000 customers in the greater Kansas City area. Of its staff of 3,000, 104 work in com-

puter services, Morgan said.

"Several years ago we could get by with high-speed drums with limited capacity, but today's low-capacity drives won't do. We need fast access to a lot of capacity and the cache disk is about the only technology we have right now that can give us that."

KCP&L made its move to-

ward efficiency last fall with the installation of a cache disk subsystem from Amperif Corp.

\$500,000 Investment

The \$500,000 investment in Amperif included roughly 2M bytes of cache memory, dual Model 5045 control processors, four Model 84502 disk drives and uninterrupti-

ble power supply and data save options. The utility reportedly configured the cache disk subsystem around the Univac control processor without requiring any modifications to the host's Exec operating system.

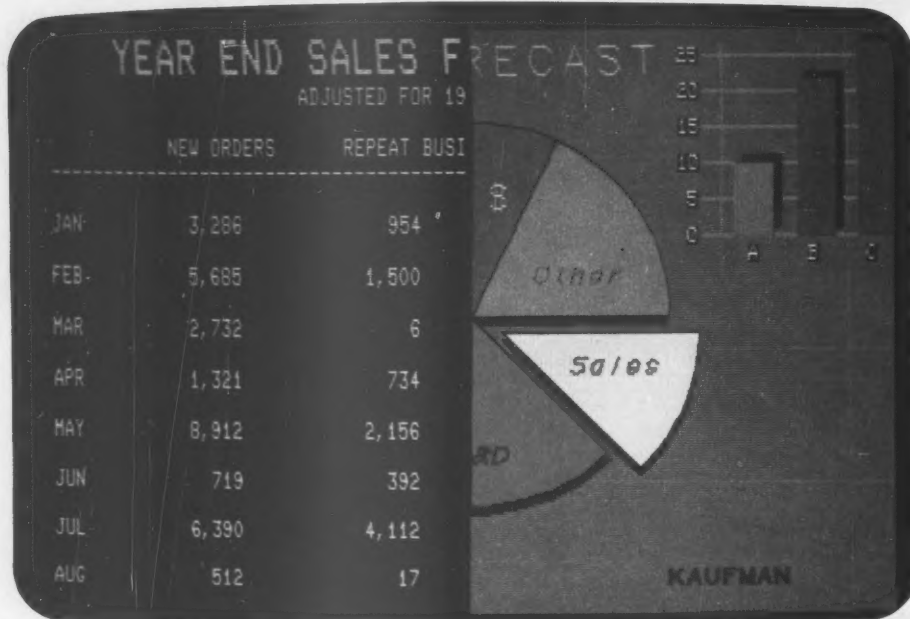
"Now, with Amperif's cache disk subsystem, we are consistently obtaining a 10-msec access time, down from a former average of 40 msec to 50 msec," Morgan said. "And it has enabled us to take a significant load off the other subsystem."

The Univac subsystems consist of six 5046 controllers, 20 8450 drives, 16 8433 drives and 11 U36 tape drives — more than \$7 million worth of Univac equipment, installed since 1975, containing two data bases, 11,000 files and 20,000 programs.

"Basically, we're running all of the host operating system and fixed mass storage on the Amperif subsystem," Morgan explained. Data sought by the utility's computer users includes a number of engineering applications and approximately 45 on-line Univac Mapper systems, which allow users to develop their own application programs.

"We get better total performance that way, and the Mapper and other data bases reside in the Univac subsystem," he noted.

Other data needed by KCP&L users includes a customer information system that provides the Customer Service Division with data on new customers, service orders, complaints, billing problems and trouble reports; an on-line transaction-driven materials inventory management system with automatic purchase requisition, purchase orders and vendor follow-up; and a human resources system with data on career planning, succession planning, safety, employee profiles, benefits and government requirements.



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Calendar

Week of Dec. 12

Dec. 15-17, New York — **Mini-computer Systems: Guidelines for Successful Selection, Acquisition & Operation.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Dec. 15-17, Washington, D.C. — **Data Communications: An Introduction to Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held Dec. 15-17 in Atlanta.

Dec. 16-17, Las Vegas — **DP Contingency Recovery Planning/EDP Auditing/Facility Design.** Contact: Education Department, Data Processing Security, Inc., 200 E. Loop 820, Fort Worth, Texas 76112.

Dec. 16-17, New York — **Networking, Protocols and Standards.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Dec. 16-17, Dallas — **Data Communications: Advanced Concepts and Network Management.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Dec. 16-17, New York — **Shell Programming on the Unix Systems.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011.

Dec. 16-17, Boston — **Protecting Data & Information.** Contact: Digital Equipment Corp., Educational Services, Seminar Programs, 12 Crosby Drive, Bedford, Mass. 01730.

Week of Dec. 19

Dec. 20-22, Denver — **Data Communications Systems.** Contact: Center for Advanced Professional Education, Inc., 11928 N. Earham, Orange, Calif. 92669.

Dec. 20-22, New York — **CICS Application Design.** Contact: David Shapiro, Sys-Ed, One Park Ave., New York, N.Y. 10016.

Week of Jan. 2

Jan. 3-7, Washington, D.C. — **Data Communications Systems and Networks.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

Jan. 5, Cary, N.C. — **SAS Curriculum Workshop.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

Jan. 5-6, Washington, D.C. — **Advanced Cable Technology: CATV and Alternative Uses, Policies and Economics.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

Jan. 6-7, Cary, N.C. — **SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

Week of Jan. 9

Jan. 10-11, Washington, D.C. — **Modern Marine Telecommunications.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

Jan. 10-12, Kissimmee, Fla. — **Local-Area Networking and Beyond.** Contact: International Communications Association, Bob Berry, Suite 828, 12750 Merit Drive, Dallas, Texas

75251.

Jan. 10-14, Madison, Wis. — **Operational Amplifiers and Transducers: Hands-On Circuit Design.** Contact: University of Wisconsin-Extension, Engineering and Applied Science, 432 Borth Lake St., Madison, Wis. 53706.

Jan. 10-14, Grand Rapids, Mich. — **Structured Systems Design/Structured Program Design Combined Course.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

Jan. 11-14, Chicago — **Structured Requirements Definition.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

Jan. 12-14, Scottsdale, Ariz. —

Hospital Information Systems: Supporting Successful Corporate & Market Strategies in the '80s. Contact: Hospital Information Systems Sharing Group, John A. Tvedtnes, 2415 S. 2300 West, Salt Lake City, Utah 84119.

Jan. 13-14, Nashua, N.H. — **How to Develop & Use a Computer-Based Marketing Information System.** Contact: New Hampshire Center, New Hampshire College, 2500 N. Rover Road, Manchester, N.H. 03104.

Week of Jan. 16

Jan. 17, Tampa, Fla. — **Documentation Training Seminar.** Contact: Technical Communications Associates, Seminar Training Program,

Suite 210, 1250 Oakmead Pkwy., Sunnyvale, Calif. 94086.

Jan. 17-18, Smithfield, R.I. — **Planning for Office Automation.** Contact: The Center for Management Development, Bryant College, Smithfield, R.I. 02917.

Jan. 17-19, Short Hills, N.J. — **IMS DL/1.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Jan. 17-19, Palm Beach, Fla. — **DP Disaster Recovery Seminar.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

Jan. 17-19, Washington, D.C. — **Auditing in the Contemporary.** Contact: Marge Umlor, EDP Auditors Foundation, Carol Stream, Ill. 60187.

(Continued on Page 38)

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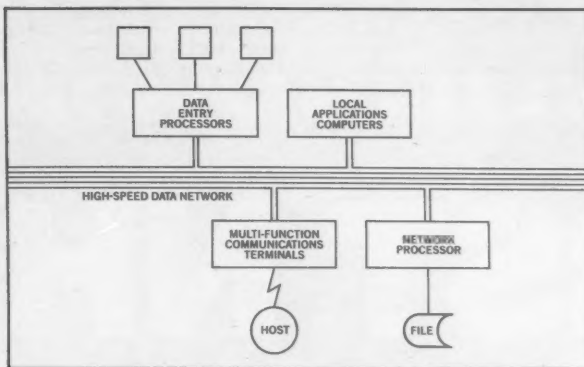
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Calendar

(Continued from Page 35)

Jan. 18-19, Sunnyvale, Calif. — **Fiber Optics.** Contact: Information Gatekeepers, Inc., 167 Corey Road, Brookline, Mass. 02146.

Jan. 18-20, Washington, D.C. — **North America and Western Europe: Impact on Product Design and Marketing.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C.

20052.

Jan. 21-23, San Francisco — **International Expositions and Conference for the CP/M.** Contact: The National Computer Shows and Office Equipment Expositions, 824 Boylston St., Chestnut Hill, Mass. 02167.

Week of Jan. 23

Jan. 24-25, Short Hills, N.J. — **IMS Data Communications.** Contact: Chubb Ad-

vanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Jan. 24-26, Scottsdale, Ariz. — **Advanced Computer Law Invitational.** Contact: Arizona State University, Arizona Law & Technology Institute, ASU College of Law, Tempe, Ariz. 85287.

Jan. 24-26, Johannesburg, South Africa — **Understanding and Using Teleprocessing Software.** Contact: Frost

& Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Jan. 24-28, Summit, N.J. — **CICS Command-Level Programming.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Jan. 24-28, Houston — **Structured Systems Design/Structured Requirements Definition.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 1725 Gage

Bldv., Topeka, Kan. 66604.

Jan. 24-28, Houston — **Structured Data Base Design.** Contact: Jim Highsmith, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

Jan. 25-27, San Jose, Calif. — **Advanced Semiconductor Exposition & Technical Conference.** Contact: Cartledge & Associates, Inc., 4030 Moorepark Ave., San Jose, Calif. 95117.

Jan. 26-28, Paris — **The Seventh International Seminar on Security in Banking.** Contact: Insig, Institut de Recherche Interbancaire, Association Sans But Lucratif Regie par la Loi de Juillet 1901, Siege Social: 40 Rue de Montceau, 75008 Paris, France.

Jan. 26-28, San Francisco — **Fundamentals of Data Communications.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Jan. 27, Washington, D.C. — **Introduction to Visicalc.** Contact: Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

Jan. 27-28, Johannesburg, South Africa — **IBM's Systems Network Architecture.** Contact: Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Week of Jan. 31

Jan. 31, Scottsdale, Ariz. — **Logical Data Base Design.** Contact: Arthur D. Little, Inc., 25 Acorn Park, Cambridge, Mass. 02140.

Ada Tutorial Set for Jan. 11

ATLANTA — A three-day Ada tutorial is being cosponsored here in January by Morehouse College, Hamton Institute, the U.S. Army Electronics Command and Softech, Inc. of Waltham, Mass.

Scheduled for Jan. 11-13, the conference will include an Ada tutorial presented by Softech and the Army and a workshop on Ada education. A number of companies will be exhibiting Ada-related products. A featured speaker will be Dr. Edith Martin, undersecretary of defense for research and development.

Approximately 2,000 attendees are anticipated, according to conference organizers.

The advance registration fee for the three-day seminar is \$165. On-site registration will be \$200, and the registration fee for students is \$25. Further information can be obtained by writing Morehouse Ada Tutorial, Box 131, Morehouse College, 830 Westview Drive, S.W., Atlanta, Ga. 30314.

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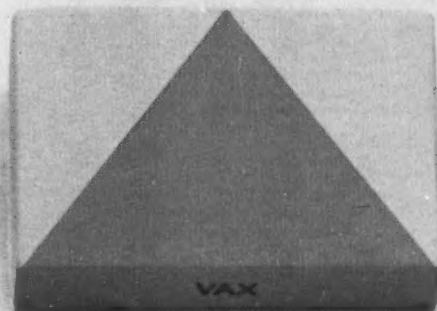
No single universal standard has emerged. Nor is one likely to. There are simply too many diverse networking environments, each fulfilling specific, mutually exclusive needs.

That's why Digital is committed to supporting and, in fact, actively promoting the more important standards now surfacing in the various environments.

Our goal is to offer our customers a range of standards to achieve any combination of networking objectives. And we've been pursuing that goal for many years.

A forward-thinking strategy.

When we first developed our networking architecture, we understood the need for flexibility.



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work freely with a wide range of protocols, including some that didn't even exist at the time.

The success of that strategy is now becoming apparent. As more vendors enter the networking field, Digital is uniquely positioned to offer compatibility with the emerging protocols. We've gone farther than anyone to assure that your options are open.

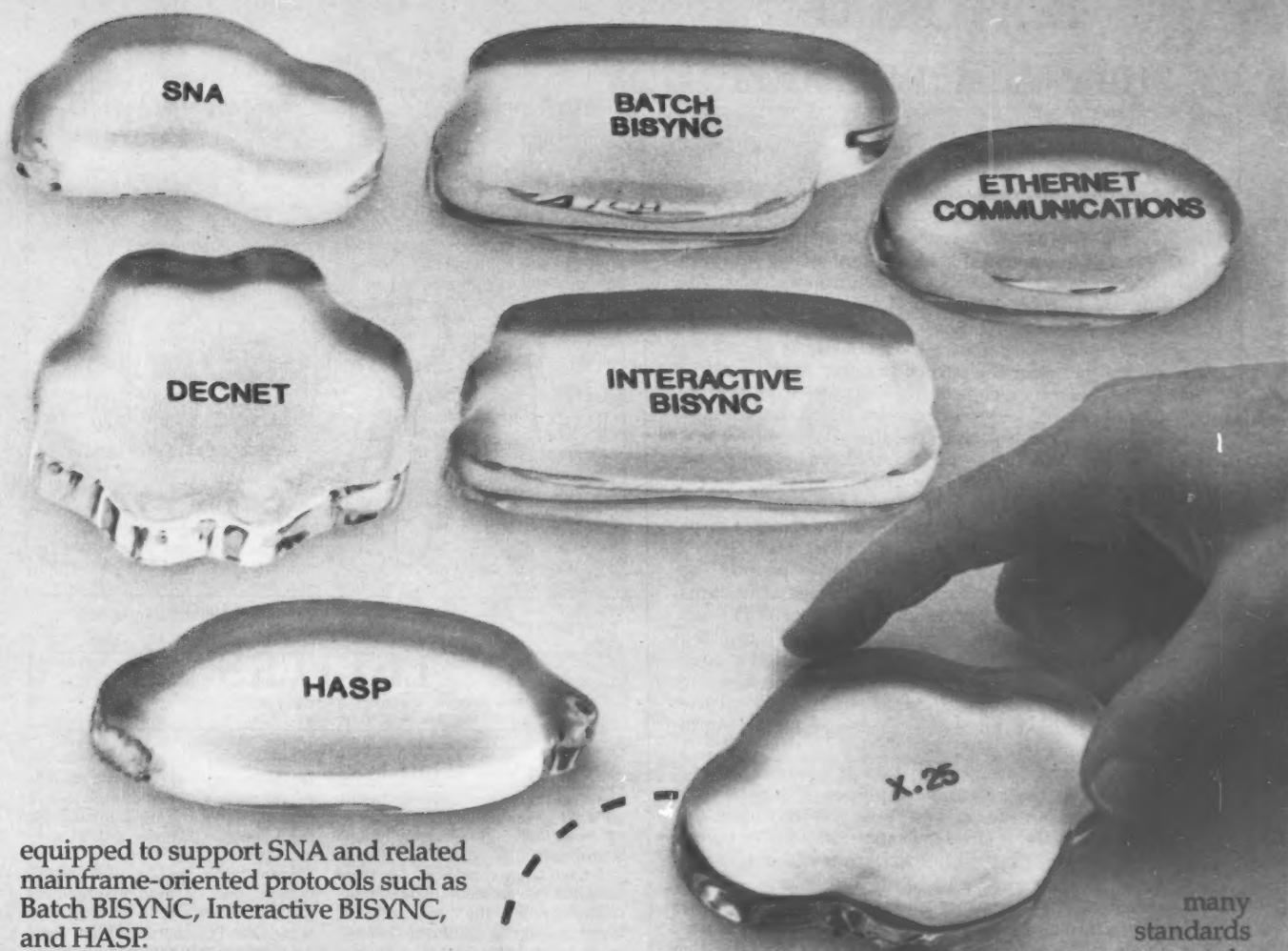
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Digital offers the X.25 protocol for use with public packet-switched networks such as Datapac (Canada), Transpac (France), and PSS (U.K.).

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equipped to support SNA and related mainframe-oriented protocols such as Batch BISYNC, Interactive BISYNC, and HASP.

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And so on.

We have listed a few of the

PROTOCOL

many standards we are currently supporting. There are more. But even more important than the number of protocols is the attitude we have toward them.

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EDITORIAL

How Unfair Is Testing?

Sometimes when you protect one group, you ultimately are going to hurt another.

This seems to be the effect, to some extent, of the Equal Employment Opportunity Commission's (EEOC) regulations as they apply to testing of entry-level programmers. In an attempt to prevent discrimination against minority groups, the EEOC makes it very difficult for a company to use aptitude tests to screen applicants for programmer trainee programs.

Even if a firm is using a well-known test, it must have this test validated for the particular population it will be testing. This is a time-consuming and expensive process that a lot of companies simply cannot afford to undergo.

However, their alternatives are difficult ones. The first is to go ahead and to use the unvalidated test and risk class action suits that could be brought if an applicant who fails the test feels he was discriminated against. The other option is to avoid testing altogether and just hope for the best when choosing programmer trainees.

This latter course is unfair to two groups of people. The first is the employer who is spending substantial amounts of money to bring each programmer trainee up to speed. It is difficult enough for companies to justify training budgets in hard economic times. If they feel their money is not well spent, they most likely will eliminate the training program and opt for experienced DPs in the future, closing off one more door for the person trying to break into programming.

More significant, perhaps, is the effect a lack of screening can have on the potential employee. If a person is hired as a programmer and fails, it is a difficult blow for him psychologically. It also may cause him to give up on data processing entirely, rather than to try to determine why he failed and improve his skills in that area.

Based on recent interviews with individuals responsible for selection and training of DP professionals, a number of companies are using testing, and it is working for them. It is too bad that tough EEOC regulations, however justified, are discouraging other companies from doing the same.

DATA PAST

Five Years Ago Dec. 5, 1977

NEW YORK — Datapoint Corp. unveiled a concept that reportedly permits users to configure several functionally dedicated processors along a common bus so all processors act as a single system and have access to a common data base.

The Attached Resource Computer (ARC) system concept could link the functional processors to a coaxial bus with certain processors dedicated to file and data base maintenance, while others could serve as application processors.

Datapoint called the concept "attached processing."

Users with Datapoint equipment already in place could implement an ARC system by adding specialized software, as well as an interprocessor bus of high-speed coaxial cable, Resource Interface Modules (RIM) and Active or Passive Hubs to link the RIMs, a company spokesman explained.

Ten Years Ago Dec. 13, 1972

ANAHEIM, Calif. — The FJCC communications and terminal products area included devices specifically tailored to meet the problems of users.

In most cases, the specialized products stressed improved cost/performance features.

Several products combined previously separated functions to simplify the job of the operator.

Included in this group was the Parallel Interface Extender system from Paradyne Corp., which replaced IBM 360/370 270-type line controllers, in addition to terminal and modem functions.

Northern Telecom, Inc., which is a subsidiary of Northern Electric Co. of Canada, showed its low-cost Logic 16 data input set. The data input set combined the functions of a Touch-Tone-type phone with an acoustic coupler and a 16-character numeric display.



"That's To Help You Forget Your Toothache"

LETTERS

Viewing Link as Interface

I read with great interest "Micro-CPU Link Eluding DPs" [CW, Nov. 8]. Your coverage was timely and thorough.

I have been convinced for some time that the problem the article describes is one of the major problems facing management information systems departments as they consider how best to provide cost-effective computing in the corporate environment.

To date, the mainframe and micro-computer experts have not been able to understand each other's differing environment and requirements; nor have they made any real effort truly to understand the strengths and weaknesses of both technologies. I believe that there is still a strong tendency for both camps to belittle the accomplishments of the other and to ignore the potential for growth that exists by combining the best of both worlds.

It seems to me that some of the issues that must be accepted before we can integrate the two technologies are:

- Large corporations have a huge investment (in the multibillions of dollars) in their existing systems.
- The data bases that are installed on the mainframes are still much too massive to be supported by the average microcomputer.
- Mainframe telecommunications networks already span the world and support many thousands of units.
- Microcomputers are truly able to provide "personal" support because of the processing power available locally and directly to the user.

If we accept that the mainframe systems, data bases and networks are here to stay, and if we also accept that the microcomputer can provide the kind of responsive, human-engineered interaction that is required to

transform the computer into a tool for the average user (and not the other way around as it so often is today), then we have the basis for solving the dilemma that the article mentions.

If we look at the history of centralized vs. decentralized management (which has been hotly debated since at least the 1950s), we find that there has been a pendulum swing between the two management styles. If we look at the history of our own industry, we see the same pattern, with a constant swing from centralized to decentralized or distributed processing and back again.

The issue is not one of centralized vs. decentralized or mainframes vs. microcomputers. Rather, the issue is one of understanding the strengths and weaknesses of both technologies and merging them into a cost-effective and responsive solution to the corporate needs.

In short, the "micro-CPU link" must be viewed as the interface where the two technologies merge and overlap and not just as a simple communications link to connect two separate worlds. Solving the problems that the article mentions will require people who know both technologies and who can apply each where it is most effective.

Jon E. Seidel
President

EDP Consulting, Inc.
Oakland, Calif.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, Computerworld, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

THE DATA CENTER /John P. Murray†

Implementating a Nonprocedural Syntax

In an earlier column [CW, Nov. 22], we described the entries of a table exhibiting implementation schemes for algorithmic syntax-based alternatives. We now shift the emphasis to syntax that has a non-procedural flavor.

The first step is at the examples representing the specification format approach shown in the table presented here. At point (1,0,0) is Pro-log Corp.'s STD Modular Method for generating programs without employing a development system or a higher level language.

Related to this approach might be a similar technique using decision tables, represented by IBM's APL Decision Table Processor at point (1,2,0).

In both of these cases, we visualize the user as an electronics engineer and the application as almost exclusively in circuit design and/or development of high-performance-oriented microprogrammed functions.

Disciplined Environment

Of course, the very existence of forms and tables for these approaches suggests a disciplined environment and the possibility of automatic program generations so that the range of these implementation schemes might well extend to the points (1,0,1) and (1,0,2).

A different set of users is suggested by the region around the line (1,1,0) to (1,1,3). These are the non-procedural, front-end processors and conventional compiler systems. The first of the examples is the Cornell Program Synthesizer, shown at point

(1,1,1), which is a syntax-directed editor.

This system is a facility for constructing a program by forcing a display template on the application developer, who responds by "filling in" the appropriate variable names, processes and parameter values. This procedure creates a program through a step-by-step, top-down generation of a syntax tree. The resulting program is highly structured, syntactically correct and automatically documented.

Another example of a front-end forms-oriented processor is Score, available from Software Design Associates, Inc. Score is a preprocessor generating Cobol programs and identified at point (1,1,2).

Quantum Leap

A quantum step in increasing capacity for implementing systems is represented by the remaining entries of the table. The IBM Query-by-Example (QBE) system is placed in the specification format category, even though it is a screen-oriented facility rather than the more conventional paper form system dominating this table. QBE is a structured system that generates responses to queries that are symbolically requested. Hence, it is positioned at point (1,2,1).

A similar approach, more application-oriented, is Office Procedures-by-Example. This is also an IBM development and is assigned position (1,3,1).

The RPG is an application generator that has a nonprocedural struc-

Integrated Solution	103	113	MARK IV	PFS
Application Generator	102	112	122	132
Structured Discipline	101	111	121	131
Ad Hoc Aids	100	110	120	130
	Assembler	Compiler	Symbolic/Function	Application

Implementation Schemes for Specification Format Syntax

ture through its specification request forms and operates within the framework of the conventional IBM OS/DOS and many other environments. The user may specify files and request reports, but must ultimately know some DP-related concepts and functions.

To the right of RPG in the table is the application generator for application systems at point (1,3,2). Here the specification parameters and generations become more functional or user specific. In this connection, we cite as an example the Generation 5 package of American Management Systems, Inc. This is an application generator aimed towards building

financial and accounting applications.

The Mark IV System of Informatics General Corp. is placed in location (1,2,3). It is a complete system for defining, generating and maintaining files, as well as providing the means for complete and flexible information retrieval and reporting.

The system is based on responding to general-purpose specification forms with a high degree of default capability, requiring a minimum of form details. The powerful file creation, maintenance and transaction facilities distinguish Mark IV from products such as RPG and give it an

(Continued on Page 44)

HUMAN CONNECTION /Jack Stone†

Loyalty and Commitment Breed Stability

In a letter from William A. Delaney, president of Analysis and Computer Systems, Inc., a software firm in Bedford, Mass., Delaney adopts a programmer's position with respect to the issue of hiring vs. in-house training:

"I believe that the following fairly represents how programmers feel about the issue:

"I came here three years ago, and this year they are hiring new graduates at a starting salary equal to my present salary.

"New hires with the same experience as I have are being hired at higher salaries than mine. It isn't fair.

"If I stay, I'm lucky to get a 10% raise. If I leave, I can get a 20% to 25% increase over my current salary. Given this picture, it obviously pays to keep moving.

"A guy left us two years ago and they just hired him back. He received a 25% increase from the firm he went to and another 25% to be hired back. It doesn't pay to be loyal."

No Easy Solution

"Of course, both the managers and the DPs have a point. There's no easy solution.

"This situation is simply a mani-

festation of the old, old law of supply and demand, and it won't stop until supply and demand meet. If supply exceeds demand — and I'm not at all sure if this will ever occur in our

"You cannot buy loyalty, and we need loyalty and commitment to achieve the stability that is essential for the long range. And this stability is necessary not only to develop the systems that our customers need, but also to allow our employees to develop their intellectual and technical skills to the fullest."

business — the opposite situation will occur.

"Don't forget what happened to the school teachers around the country. Examine their plight today, and contrast it with where teachers were 15 years ago — when there was a teacher shortage.

"Then, they were jumping from job to job like grasshoppers; nowadays, they are so committed to one employer they have to be practically "blasted" from their jobs by court actions.

"As a result, there is very little voluntary movement by teachers these days.

"Changing job environments, however wrenching they may be, is

a natural result of changing social situations; programmers are not singled out for these problems.

"What we do at my company is to give our employees participation in

our profit-sharing and bonus systems, plus a regular salary, to compensate our employees who have been with us a long time for their time with the firm.

"If one of our people leaves before 10 years, he must forfeit a sizable percentage of his profit-sharing account, which is then distributed among those still in the system.

"This program seems to be fair and reasonable and seems to be one important factor that has given us an annual turnover rate of about 9%, compared with an average of over 30% for the rest of the industry.

"Most employees who leave do so within the first two years of their stay, before they enter the profit-

sharing system; those valued employees who remain with us seem content.

"You cannot buy loyalty, and we need loyalty and commitment to achieve the stability that is essential for the long range.

"And this stability is necessary not only to develop the systems that our customers need, but also to allow our employees to develop their intellectual and technical skills to the fullest.

"In most cases, managers who pay unusually high salaries for the experience they need are buying just that — and only that — to get a short-term job done.

"Far too often, the experienced DPs will abruptly leave when the glitter of a newer machine becomes too appealing to ignore, and the manager has to begin the insidious hiring cycle all over again.

"No, loyalty is not for sale, but when a manager gets it, it certainly should be recognized and rewarded.

"What makes loyalty so valuable is the very fact that it's not for sale, never was and never will be."

Letters to Stone should be addressed to him at Box 270, 1377 K St. N.W., Washington, D.C. 20005.

Users' Observations

In reading "Info/Management Snags Ruffling Users" [CW, Nov. 15], it appears that the author and consultant Ann Anderson identified "the tip of the iceberg" in discussing the ruffles with IBM's Info/Management.

We have been working with many Info/Management users since the product has been announced and we have categorized their observations into two areas:

- **System Resources:** limited number of users; each user requires approximately 1M byte of resource; and report generation significantly impacts response time.

- **System Features:** per-

forms poorly with a large data base; requires system programmers to modify; commands are difficult to remember and modify; most screens are unused; lacks system date and time stamping; no alert notification on problems; lacks automatic fill of problem tickets from data base; no global updating capability; and not flexible enough to adapt to the user's environment.

Although these are the complaints we hear most often from the users of Info/Management, it appears that

there is a more serious problem in IBM's approach to systems management.

Why continue to sell systems management concepts that impose predetermined solutions?

Why not provide the user with systems management tools that allow the flexibility for user-defined approaches rather than "integrated" software strategies designed to sell hardware?

Edward J. Beck
President

Peregrine Systems, Inc.
Irvine, Calif.

LETTERS

Whom to Trust?

I thoroughly enjoyed "Blumenthal Tells How He's Changing Burroughs" [CW, Nov. 15]. He's quoted as saying, "I've run companies long enough so I've learned who to trust."

Didn't Blumenthal pick William Agee as his successor at Bendix Corp.? Didn't Agee see to it that, after resigning as secretary of the treasury, Blumenthal wasn't offered back his seat on the Bendix board of directors? Didn't most of Bendix's independent, outside directors resign during the recent takeover instigated by Agee's actions?

Three things count in

business judgment: you, your people environment and your product or service environment. If any one of these fails, then it's likely that all fail.

Richard Shemtob
New York, N.Y.

'Suitability?'

"Suitability?" Now that's a subjective characteristic. I think Jack Stone's article "Exploring the 'Suitability' Factor in DP Hiring" [CW, Nov. 8] is simply wrong.

Do you want someone who can do the job? Or someone to pal around with and drink with after work?

The suitability factor will be used to reinforce the manager's own prejudice and bias and his perception of the work environment.

R.D. El Huk

Chicago, Ill.

Nonprocedural Syntax

(Continued from Page 43)
integrated solution character.

The remaining entry in the table is Software Publishing Corp.'s software product, Personal File System (PFS). This complete system is a good example of emerging data management systems out for microcomputers.

PFS is entirely video-forms-oriented. For a given set of application-specific descriptors, a screen template is generated, which then guides the user in the complete solution of his information retrieval and reporting problem.

Implementing Screens

Just short of the application generators are the various combinations of design and development facilities

that aid in implementing screens, data bases and certain common data validation and processing functions.

Examples of such products are IBM's Development Management Systems for CICS environments, Informatics, Inc.'s Terminal Application Processing System and Cincom Systems, Inc.'s Mantis.

These facilities are characterized by their specification format and decision table syntax, their data processing language orientation and their very structured presentation, combined with the exploitation of reusable code. Their proper position would be in the right half of the figure.


Frank is executive vice-president of Informatics General Corp. in Woodland Hills, Calif.

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'Ada Tutor' Set to Address Programmer Shortage

By Paul Gillin
CW Staff

RICHARDSON, Texas — While the software community awaits the release of the first validated Ada language compilers next year, a shortage of Ada-trained programmers looms on the horizon.

With that rationale, a developer of computer-aided instruction (CAI) systems has announced that a CAI environment for Ada that incorporates artificial intelligence (AI) will be available late next year, about the same time as the first Ada compilers.

Computer Thought Corp. said the product, tentatively called Ada Tutor,

was designed to teach the highly touted Ada standard to programmers who know one other high-level language, a spokesman said. The average programmer should require about 40 hours of the computerized instruction.

Although the environment is intended to supplement classroom instruction, the spokesman said many programmers probably could teach themselves Ada using the automated instruction program alone.

"We believe Ada will have a significant impact on business over the next two decades," said George Poonen, vice-president of Computer Thought. "There is no standard for real-time lan-

guages in the industry. That is a vacuum that Ada is meant to fill."

The Ada environment will cost \$50,000 to \$75,000, depending on the number of users, Poonen said, and will include AI features that gear the pace and complexity of the instruction to the individual student. Poonen said the system tries to construct a model of the student's knowledge and misconceptions as the training progresses and then orients its advice toward perceived weaknesses.

"For example," Poonen said, "Ada has a notion of user-defined types, but Fortran has no such background." So a

(Continued on Page 48)

And Reduces Overhead

Tire Firm Rolls Along With 'VAM/SPF'

TORONTO — The manager of Canadian Tire Corp.'s technical group here said his company has always liked its IBM Systems Productivity Facility (SPF), but running it under IBM's TSO, "was like taking a large truck to go buy a few groceries."

SPF simply consumed too many CPU resources running under TSO, said Juan

Lidon, manager of the technical group. So Canadian Tire went shopping last year for a software package that would allow it to continue running both SPF and TSO but reduce computer overhead. It settled on Boole & Babbage, Inc.'s Vtam Applications Monitor for SPF (VAM/SPF).

The company supports a computerized network of 350 independent dealer stores throughout Canada, processing all orders,

personnel, payroll and program updates on-line. In addition, three large Toronto warehouses track goods through all stages of the control process, including receiving, distributing and stock maintenance.

The large network is supported by an Amdahl Corp. V8 computer with 16M bytes of main memory, an equivalent of 64 3350 disk packs and 350 IBM 3278 termi-

(Continued on Page 48)

Last Call for Papers

When the word comes down that a new application is required and — as always — it's needed "yesterday," the solution is often a software package.

In the Feb. 28 issue of *Computerworld*, a special report on applications software packages will focus particularly on what happens after a package is brought in-house. We want your input in the form of articles detailing your experiences with specific products.

Articles should be five to 10 pages typed, double-spaced. The deadline is Jan. 7. Black-and-white photographs and other graphics are welcome.

Further information and a one-page list of possible topics can be obtained from Lois Paul, Senior Editor/Software. Manuscripts should be sent to Paul at *Computerworld*, February Special Report, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

'Sysa' Allocates, Verifies CICS For Mainframes Under MVS

BOISE, Idaho — H&W Computer Systems, Inc. has introduced an IBM CICS Dynamic Allocation/Verification package called Sysa for IBM and plug-compatible mainframes running under MVS with CICS Release 1.4 and above.

Sysa was designed to assist operations staffs and to reduce user complications when CICS initialization problems occur.

Without Sysa, systems programmers are required to verify twice each Vsam file prior to its initialization to ensure the file's validity, the vendor said. Sysa reportedly checks for the presence of all CICS files and will double verify the Vsam files. Any that are missing or are in error will be reported, and CICS still will come up, the vendor said. Once technicians re-

solve the missing or bad file problem, they can dynamically allocate the corrected file to CICS. In addition, dynamic deallocation can be performed with reallocation, if necessary.

Since CICS files are defined to Sysa in a separate partitioned data set member or Vsam file, they do not need to be included in the CICS initialization job control language, the vendor said. Sysa installation reportedly requires a half hour with a link-edit of the delivered object code and the establishment of the definition file.

As an introductory offer, Sysa will be CPU-licensed at \$3,500 through February 1983, and thereafter will be licensed for \$4,500, according to H&W Computer Systems, P.O. Box 4173, Boise, Idaho 83704.

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Enhanced 'Datadictionary' Features Resource Controller

PRINCETON, N.J. — Applied Data Research, Inc. has unveiled Release 2.3 of Datadictionary, the resource control system that is the heart of its ADR/Datacom system for IBM and plug-compatible mainframes running under OS and DOS.

Among its new features are the Integrated Resource Control Model (IRCM), a set of entities and relationships intended to define a myriad of data processing activities. Using IRCM, management reportedly can model the DP and information management environment. The model contains and controls definitions of applications, programs, jobs, steps, users, user authorization levels, on-line screens, reports and more basic data management entity types.

Datadictionary is now fully on-line, interactive and menu-driven, the vendor said, noting that it has a set of commands that allows experienced users to bypass menus. It automatically supports additional entities defined by users in the same manner as standard entity support.

Release 2.3 of Datadictionary presents panels in the order needed for maintenance activity, the vendor said. Related functions are processed through one physical screen or panel. In addition, data administrators can maintain fields for records, keys and elements, and users can request displays of the information using Cobol compiler labels or entity names.

With the addition of the Datadictionary Service Facility (DSF) as an integration component, Datadiction-

ary becomes the central repository for defining all resources used by the ADR/Datacom system, the vendor said. DSF reportedly provides a generalized interface for user programs or ADR software to interact dynamically with the dictionary. Any activity available to an on-line Datadictionary user can be program-driven, according to the vendor. DSF is said to allow Cobol, Fortran, assembler or PL/I programs to interact with information in the Datadictionary. User exits are provided for enforcing naming standards and edit criteria.

Additional Features

Additional features of the new release allow on-line users interactively to add, update and delete information in Datadictionary, depending on their authorization, the vendor said. Datadictionary's on-line users also can define entity extension, new entities and relationships for on-line or batch input, update, modeling, analysis and display. Datadictionary also provides a split-screen capability for IBM 3273, 3274 and 3275 display terminals. Users reportedly can simultaneously view one section of Datadictionary and update another section.

The permanent license price for Datadictionary is \$31,000 for OS environments, \$27,000 for DOS environments and \$20,300 for IBM Models 4321, 370/115, 370/125 and 370/135. Monthly, three-year and five-year leases also are available, the vendor said from Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

Boeing Offers 'Bits' Family Of Eight Software Modules

VIENNA, Va. — A family of software modules made up of an assortment of packaged programs has been announced by Boeing Computer Services Co.

The Boeing Intelligent Terminal System (Bits) is composed of eight software modules or workstations that run on the Terak Corp. 8510; Xerox Corp. 820; IBM Personal Computer; Digital Equipment Corp. PDP-11/50, PDP 11/03 and PDP 11/23; and Scientific Micro Systems, Inc. 11/X series computers. Workstations are hardware-independent, the company claimed.

The workstations reportedly are composed around the basic intelligent terminal software workstation, including the Bits operating system, screen editor and communications capability. Two data entry software workstations include a forms composer/editor program for generation of full-screen templates and a data entry program for collecting data against the screen forms.

The three business management software workstations include Bitscalc, a three-dimensional electronic spreadsheet processor, the Bitsgraf graphics system and business graphics utilities. A text-processing software workstation is offered for document, memo and letter preparation. The EIS/ODC software workstation is an off-line data collection (ODC)

facility for the company's Executive Information System (EIS) decision support system, which is available on a time-sharing basis.

Workstations start at \$2,600, a spokeswoman said from Boeing at 7980 Gallows Court, Vienna, Va. 22180.

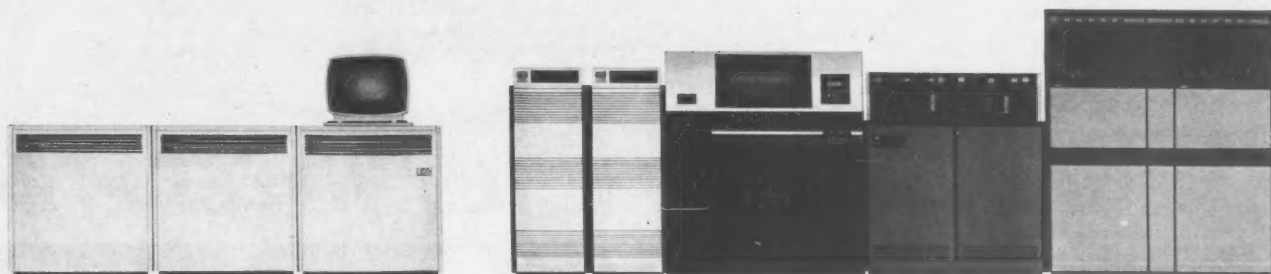
'HCGS' Links To DEC Plotters

BURLINGTON, Mass. — Texprint, Inc. has announced a software package said to allow applications software written for the Tektronix, Inc. Plot 10/4014 graphics systems to be run on Digital Equipment Corp. dot matrix printer/plotter terminals.

Host Computer Graphics Software (HCGS) reportedly allows output of charts, diagrams, maps, formatted reports and other text graphics data on DEC's VT-125 terminal, the Decplot LA-120 and other dot matrix printer/plotters. Written in Fortran, HCGS is supplied in source form for DEC systems or any Ansi-/Ascii-compatible system running Fortran. Commands that are compatible with California Computer Products, Inc. systems are also accepted, the vendor claimed.

The software costs \$695 from Texprint at 8 Blanchard Road, Burlington, Mass. 01803.

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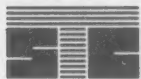
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**Storage Technology
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System/34 Users Get RPG-II Link to DPS/6

SANTA ANA, Calif. — Users of IBM's System/34 can now transport their RPG-II programs to Honeywell, Inc.'s DPS/6 series minicomputers and then run the applications without reprogramming, according to a spokesman for California Software Products, Inc. (CSPI).

System/34-to-DPS/6 conversions

are reportedly made possible by a just-introduced CSPI software system known as RPG Package 34.

Consisting of six integrated utilities or other software components, the product provides an upgrade path for System/34 users who find themselves unwilling or unable to convert to IBM's System/38.

DSP/6 family members are said in some cases to provide as much as six times more computing power than a System/34.

Unlike a CSPI-assisted upgrade to a DPS/6 system, a conversion from a System/34 to a System/38 reportedly requires an extensive and costly reprogramming effort. The two IBM

systems were designed for dissimilar applications and support different programming languages — RPG-II and RPG-III, respectively.

Among its utilities, RPG Package 34 provides an aid that allows data and source code to be converted from Ebcidic to Ascii, the spokesman said. Unlike the Ebcidic-oriented System/34, the DPS/6 series members operate in the Ascii environment.

RPG Package 34 also comes with an RPG-II compiler, RPG-II runtime support feature, source-entry utility, screen-format generator and an operations control language processor.

The complete package costs \$12,500 and is available from CSPI at 525 N. Cabrillo Park Drive, Santa Ana, Calif. 92701.

Tire Firm Relies Heavily on 'VAM/SPF'

(Continued from Page 45)

nals. The system is supported by IBM's MVS/SP operating system with the IMS management system.

About a third of the computer resources were consumed by TSO for program development, Lidon said. And he found that most of his TSO activity was supporting SPF. Canadian Tire needed a package that could run SPF without major changes or operator retraining and would be compatible with the security system already in place. VAM/SPF was the only package Lidon saw that met those requirements.

The company has been using VAM/SPF since early 1981, with software uptime reported at 99.8%. Since the package was installed, Canadian Tire has reduced the number of TSO users from 40 to 20.

"VAM/SPF is a complement to, not a replacement for, TSO," Lidon said. "When you do trivial work under TSO, you are using only a fraction of the super functions it has."

The firm uses four VAM/SPF monitors, each accommodating up to 12 users.

"If we find that users are unable to access the computer when they need to, we simply add one more monitor to support 12 additional users within

a single MVS address space," Lidon said.

The package has saved computer resources and cut down on frustration caused by slow response time, he said.

Under VAM/SPF, response time

for trivial work has been reduced to .3 to .6 seconds from over one second under the old TSO environment. Lidon figures the package is saving 600K bytes of real memory and has freed up the equivalent of one block multiplexer channel.

Ada Tutor Aims At Shortage

(Continued from Page 45)

programmer trained in Fortran would need basic instruction in user-defined types in order to proceed. "But someone trained in Pascal would be familiar with them already," Poonen said. "The instruction could simply skip over a lot of that material for that student."

The tutorial environment is also said to provide a source language interpreter rather than a compiler, which offers better retention of high-level commands. The spokesman claimed that the system has graphics capability.

Poonen sees a critical shortage of qualified teachers of complex languages. And even a classroom environment does not offer hands-on experience. "It's like learning how to swim," he said. "No amount of lecturing will teach you how to do it."

The firm is currently testing the environment on a Symbolics, Inc. Lisp system chosen "for its fine graphics capability," Poonen said. The initial version of Ada Tutor will also be available for Digital Equipment Corp.'s VAX-11s.

Poonen said the environment will go into beta test in March or April, with its Release set for about six months later.

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Note: InSci systems operate in IBM 370, 43XX, 30XX and compatible environments, and are TP monitor independent.

Single-, Multiple-User Environments

Unix Look-Alike Fits Some Series/1 Models

PRINCETON, N.J.— IBM is making a modified version of Bell Laboratories' Unix operating system available for some models of its Series/1 minicomputer.

Developed at Cleveland State University, IBM's Carrier Products Interactive Executive (Cpix) program reportedly operates with either the Series/1 Models 4954 or 4955 and supports instruction or data spaces as large as 64K bytes.

Cpix can be used in both single- and multiple-user environments, IBM said here Nov. 23 during a brief preview of a Dec. 8-9 conference titled Compuserve '82.

In the single-user mode, the Unix

look-alike requires at least 128K bytes of main storage. In the multiple-user mode, the stand-alone program supports as many as 16 concurrent users and up to 512K bytes of internal memory.

Supplied with a University of Delaware-developed Series/1 assembler and C language compiler, Cpix supports a number of additional features and options, including:

- I/O drivers for IBM's series 4962 and 4963 disk drive systems.
- Full-duplex asynchronous communications at up to 19.2K bit/sec.
- Binary synchronous communications at up to 56K bit/sec.

The operating system, which can

be obtained for a one-time license fee of \$6,500, becomes available this month from IBM's Telecommunications

Carrier Products organization, which can be reached through P.O. Box 10, Princeton, N. J. 08540.

Enhanced 'Fastmap' Aids IBM 'BMS' Code Generation

DALLAS — An enhanced, menu-driven version of its Fastmap on-line mapping control facility for IBM and plug-compatible mainframes running under DOS or OS with CICS has been released by Software Plus, Inc.

The new release of Fastmap in-

cludes diagnostic facilities to ensure accurate IBM Basic Mapping Support (BMS) code generation, copy functions intended to generate similar maps from previous map images, facilities for viewing and/or modifying the generated BMS code and enhanced utility functions, including hard-copy printouts for documentation.

Fastmap is intended to improve the control and organization of the mapping development process. It reportedly allows the programmer to "paint" the entire desired screen directly on the terminal and then generates the industry-standard BMS code for that map. The BMS code and painted-image information are maintained by an on-line interactive directory, which also keeps track of all map sets and associated maps.

Software Plus is offering a free, 14-day trial usage of the product. The purchase price is \$4,900, with optional monthly payments as low as \$180/mo. Further information can be obtained from the vendor at Suite 1305, 13773 N. Central Expwy., Dallas, Texas 75234.

'Ca-Scheduler' Targets Dynam, Jasper Families

JERICHO, N.Y. — Computer Associates International, Inc. has announced a scheduling and production management package designed to interact with its existing Dynam and Jasper families of operations software in the IBM DOS/VSE environment.

Ca-Scheduler is intended to automate every stage of manual production control efforts. It will enable many DOS data centers to reallocate operations personnel formerly assigned to job scheduling and tracking, the vendor said.

The package reportedly will permit a user to define all job schedules whether performed on the primary CPU or in secondary areas. Those jobs and schedules can then be automatically initiated based on a variety of criteria.

Job dependency can be based on prior jobs completed, data set creation, availability of system resources or by simple calendar and deadline specifications, the vendor said.

Ca-Scheduler's capabilities include a reporting system, tracking and monitoring in either a batch or on-line mode, the spokesman for the vendor noted.

Ca-Scheduler is priced at \$10,000 for a three-year lease, according to Computer Associates at 125 Jericho Tpk., Jericho, N.Y. 11753.

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Relate/3000 Update Includes Report Writer

SANTA CLARA, Calif. — Computer Resources, Inc. (CRI) has announced Version 4.20 of its Relate/3000 relational data base management system for Hewlett-Packard Co. HP 3000 series computers running under the Multi-Programming Executive (MPE) operating system.

The enhanced version includes the Create report writing option. Create is said

to offer a simple, interactive method for manipulating data and creating reports from any data base on the HP 3000, including HP's Image/3000 data bases. Reports can

use any file combination.

Enhancements have also been made to the company's Graf integrated color graphics option. The release includes the capability to up-

date views or virtual files and permits the user to manipulate any number of separate files as if they were a single file, the company claimed.

Relate is priced at \$18,500. Create costs \$5,500 through February 1983. Graf is also priced at \$5,500 from CRI, at 5333 Betsy Ross Drive, Santa Clara, Calif. 95054.

'Taskmaster' Announced for DEC PDP-11s

STUDIO CITY, Calif. — Dawn Computer Corp. has announced Taskmaster, a software program for users

of Digital Equipment Corp. PDP-11 computers running under RSC, RT-11 or TSX-Plus, which is said to com-

bine word processing, list processing, data communications, data base management, telexing, typesetting, print-

able bar graphics and on-screen math.

List processing supports sort, select, merge and label printing functions, a spokeswoman said. Data communications supports asynchronous Ascii communications up to 19.2K bit/sec. The data base manager allows selection of specific records, fields, calculation and tabulation.

The word processor features on-screen calculation, handling of superscripts and subscripts in scientific notation, proportional spacing and multilevel hyphenation, the spokeswoman said. For the RT-11 version, the package costs \$4,000 or \$2,500 without the data base manager. For RSX and TSX-Plus, the cost is \$5,500, or \$3,500 without the data base manager from 4019 Tjunga Ave., Studio City, Calif. 91604.

Planning Tool Enhanced

OAK BROOK, Ill. — Business Model Systems has announced Release 5 of its Business Modeler planning and control package for IBM System/38 and System/34 computers.

Release 5 is said to feature externally defined files, interactive goal-seeking, 198-char. printer capability, an enhanced report writer and training documentation.

The package is written in RPG-III, providing an interface with other financial applications, a spokeswoman said. The System/38 version is priced from \$8,000 to \$18,000. The System/34 version costs from \$5,500 to \$12,000 from Suite 321N, 2625 Butterfield Road, Oak Brook, Ill. 60521.

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An entry level F/4000 system costs only \$71,500. This includes CPU, Disk Controller, System Control Processor for remote operation and diagnostics, 1 MB memory, a 135 MB Disk Drive, Tape Controller and 72 KB Magnetic Tape Drive, Display Console and pregenerated IBM VM/370 operating system. (OS/VS1 and DOS/VS are alternate operating system selections.)

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Datapro, April 1982

Walt Josephson, President
Applied Software, Inc.

Tom Chollpaki, Project Manager
Sysorex International

Leo Shapiro, President
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'Archives' Provides File Storage Under VM

RIDGEFIELD, Conn. — Adesse Corp. has announced the VM Archival Storage Subsystem (Archives), a software package intended to provide a permanent repository for users' files on direct-access storage and magnetic tape devices used with IBM and plug-compatible systems running under VM.

Users employ the store function of the Archive command in order to send files to the Archives service virtual machine for storage, the vendor said. The successful processing of each file is reported to the originating user so the file may be erased from the disk.

Requests to retrieve files from Archives are submitted via the retrieve function of the Archive command, the vendor explained. The files to be retrieved are located and transmitted to the user for further processing. The list function of the Archive command submits a request to the service virtual machine to produce a report concerning the files stored in Archives.

File selection criteria reportedly follow standard Listfile command conventions and retrieval requests are batched to improve tape drive usage. Files are identified by file name and type within each user ID.

Further Classification

Further classification is permitted by the use of comment data that may be associated with a file. Groups of

user IDs may be created to provide access to a common pool of files to a number of different users.

Two copies of each archival tape are created to maintain redundancy and meet disaster recovery requirements, the vendor noted, adding that files that have been stored in Archives may be erased to release space on the user's disk.

Archives is offered with a

per-CPU license for a monthly charge of \$125. Archives maintenance is included in the monthly charge. The purchase price for the software is \$5,000 per CPU. Customers who purchase an Archives license also may subscribe to maintenance for \$25/mo. Further information may be obtained from Adesse Corp. through P.O. Box 515, Ridgefield, Conn. 06877.

'UCC Eight' Enhanced For Analysts

DALLAS — University Computing Co. (UCC) has announced enhancements to its UCC Eight resource management support system. The system runs on IBM and plug-compatible mainframes under MVS or OS/VS1 with CICS.

UCC has added a new configuration that provides teleprocessing analysts with hard-copy documentation of their teleprocessing networks. An improved message services sign-off control is said to increase user friendliness.

Users are also provided with added information in automatic printing for on-line screens. Menus reduce the amount of resources required to operate on-line, the vendor said.

The package costs \$40,500 from UCC at UCC Tower, Exchange Park, Dallas, Texas 75235.

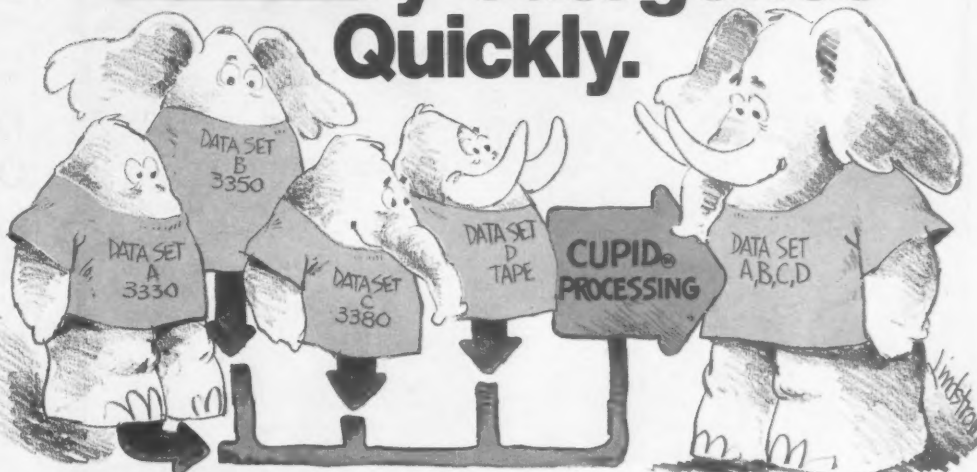
Service Adds 'Autotab II'

MILWAUKEE — A.O. Smith Corp. has added Computer Associates International, Inc.'s Autotab II business modeling package to its line of time-sharing computer services.

Designed for use in IBM OS/MVS shops running TSO, the package is typically used by business and financial managers, analysts and accountants to assist them in making marketing, production and financial decisions, the vendor said.

The package has been integrated into A.O. Smith's Information Center and is billed on an as-used basis, the vendor said from 3533 N. 27th St., Milwaukee, Wis. 53216.

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IBM installation which uses MVS system control.

CUPID saves you time and money with every run.

CUPID allows data sets to be moved or migrated to the device at the most appropriate block or buffer size without creating concatenation problems. You end up with a normal run even when data sets are on different devices and have different attributes.

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This flexible software program is delivered to you on magnetic tape. You won't be doing a system generation; all CUPID needs is a named SVC and a place in the system library.

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CUPID software is available right now. And it costs just \$4,000 for a fully paid license from Control Data. You have a yearly maintenance service charge of

\$450, but you'll be saving money and time. The increase in your site's efficiency will more than pay for the low cost of CUPID. Call your local Control Data Peripheral Systems representative or call toll-free 800/328-6207 with your purchase order and CUPID will be there when you have to concatenate without abends. No matter how contrary your categories are.

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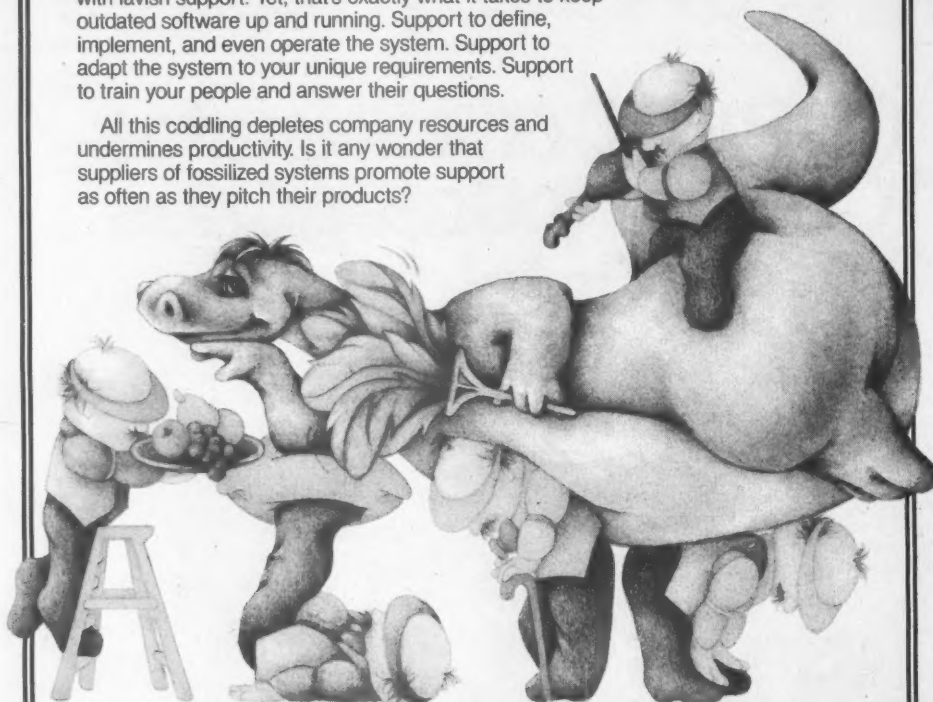
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'PDS/11' Aids DEC VAX-11 Applications

BURLINGAME, Calif. — McCue Systems, Inc. has announced a package said to reduce the number of redundant keystrokes necessary to develop applications on Digital Equipment Corp.'s VAX-11 line of computers running under VMS.

Called Program Development Shell (PDS/11), the package includes a history command log that allows a user to reference any previous command by typing a two-char. abbreviation, a spokesman said.

Included is a facility for editing any command previously entered using DEC's standard EDT text editor. Other features are claimed to simplify moving through tree-like directories, compiling and linking programs, creating forms using the FMS forms management package and maintaining object code and forms libraries.

The package costs \$500 from McCue at Suite 212, 330 Primrose Road, Burlingame, Calif. 94010.

Discount Offered On 'Databasics'

BUFFALO, N.Y. — Bradmark Computer Systems, Inc. is offering its Databasics package for the Hewlett-Packard Co. HP 3000 computer to nonprofit educational institutions at a 30% discount until the end of the year.

The package reportedly includes the Dbcopy II data base copy feature, Dbisam, which allows HP Image or Ksam-like access to the same set of files.

Also included are DB-Key-Change, which assists in performing critical key-change operations and Base Builder, which puts together a sample data base from a production data base, the vendor said.

The package costs \$4,750 before discount from 4446 Main St., Buffalo, N.Y. 14226.

'Sequitur' Fits 32:16 Desktop

BERKELEY, Calif. — Pacific Software Manufacturing Co. has announced a screen-oriented relational data base management and word processing system for the Fortune Systems Corp. 32:16 desktop computer.

Called Sequitur, the package reportedly allows users without programming experience to create their own data bases.

Sequitur's operations are based on a visual table with data represented in rows of information. This setup reportedly allows users to manipulate data by inserting characters into an appropriate column, a spokesman said.

Users can create files or tables without knowing in advance what future applications will be, the company claimed.

The package is available for \$1,395 from Pacific Software at 2600 10th St., Berkeley, Calif. 94710.

TECHNOVATION: MANTIS.

Study Shows MANTIS the Premier Application Development System

Application Development System (ADS) technology can do more to increase overall programmer productivity, reduce maintenance costs, and solve the severe application backlog problem than any other single software product.

But in a marketplace flooded with products to address this need, your choice of an application development system can be a difficult task.

Recently, the Merlyn Corporation completed the industry's first exclusive study* on eight available ADS software systems. And this study clearly confirms what Cincom users already know. MANTIS is decidedly the winner.

Among the three most widely used systems—MANTIS, DMS and UFO—MANTIS led every user satisfaction category: productivity enhancement, on-line performance, ease of learning, ease of use, documentation, support and reliability. And in the most important category—"Overall Capabilities"—MANTIS was again the winner.

User satisfaction? 33% of DMS users said they would not recommend their system to others. Among UFO users, 6% would not recommend theirs. For MANTIS users, not one single user said no.

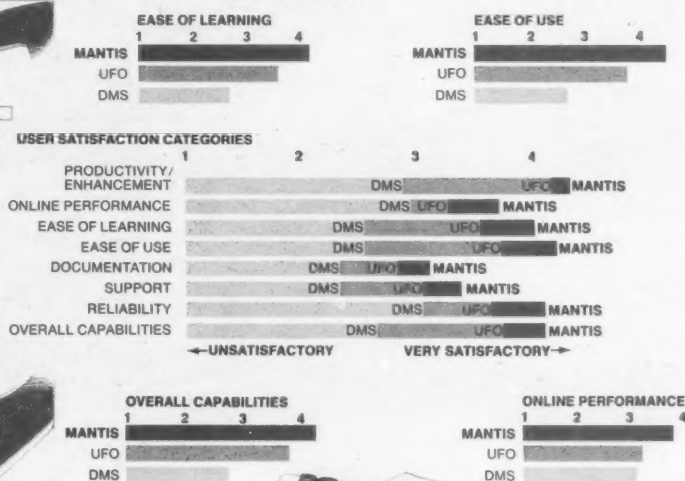
Further evidence of MANTIS' superiority is the overwhelming industry acceptance. In only 18 months since its introduction, MANTIS has gained 11% of the total ADS market share. That's a substantially higher growth rate than all of the other seven systems studied.

But while we're very pleased to be the runaway winner, we're even more pleased that MANTIS is becoming the industry standard for on-line programming. 84% of MANTIS users develop 91-100% of their applications with the system. Only 67% of DMS users reported such high usage. With UFO, the figure plummeted to only 48%.

These are merely the highlights of the conclusive Merlyn Study. But the findings are clear. When it comes to application development systems, MANTIS is in a class by itself.

MANTIS is another of the many solutions developed through Cincom's commitment to technology and innovation—TECHNOVATION. Using the power of MANTIS' 4th Generation Language, you can look forward to:

- dramatically increased CICS and ENVIRON/1 programmer productivity
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*CICS Application Development Systems: The Comparative Consumer Report. Written and published by MERLYN CORPORATION. Survey data from Focus Research Systems, Inc. 1982.

For more detailed information on MANTIS, Cincom's powerful new application development system, contact our Marketing Services Department. 2300 Montana Ave., Cincinnati, OH 45211

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Kenwood to Market, Provide Support Services for 'Waldo'

CHICAGO — Kenwood Associates has announced it will market and provide certain support services for Engineering Computer Corp.'s Waldo software.

Waldo is an on-line tool for Prime Computer, Inc. systems based on the Wylbur system, which was originally designed by Stanford University for IBM computers. It combines a line editor with a full-screen editor and business word processing capabilities, a spokesman said.

Free-format, English-language commands are used, with a common set of com-

mands for both full-screen and line editing modes. Its indexed work file is resident on a disk and is updated with each command issued. In full-screen editing mode, Waldo uses local intelligence in block-mode terminals to minimize load on the CPU.

Waldo costs \$6,000. Kenwood Associates can be reached through Box 11520, Chicago, Ill. 60611.

'WDS System' for HP 3000 Enhanced, Renamed 'Compass'

CALABASAS, Calif. — Western Data Systems, Inc. has changed the name of its integrated manufacturing and accounting software from the WDS System to Compass and has announced enhancements to the product.

Compass currently runs on Hewlett-Packard Co. HP 3000 computers and, in early

1983, will be made available for Digital Equipment Corp. VAX-11 minicomputers.

The enhancements to the product are intended to improve its ease of use and the flexibility of its application to different environments, the vendor said.

Smaller companies can employ Compass on a service bureau basis, using the WDS

Data Center near Los Angeles, the vendor reported. Full support for Compass, including customization and training, is provided.

Compass is priced at \$90,000 for both the HP 3000 system and the upcoming DEC VAX-11 version, Western Data Systems said from 23907 Ventura Blvd., Calabasas, Calif. 91302.

'AZ7' Update Announced For IDS II

BURLINGTON, Mass. — Azrex, Inc. has released an updated version of its AZ7 Report Writer/Data Management software package for use with the Honeywell, Inc. Integrated Data Store II (IDS II) data base management system.

The new version can be used on Honeywell Level 66 and DPS 8 computers, according to the vendor. The package includes views of the data base, a Navigate command to Walk the data base and detailed data base Find commands.

Price ranges from \$16,000 to \$32,500, depending on options, from Azrex at 3 Mountain Road, Burlington, Mass. 01803.

Aid Targets Schools

PENNSAUKEN, N.J. — A minicomputer-based software package for secondary and elementary school districts has been announced by Keystone Information Systems, Inc. and its subsidiary, The Software Works.

Called Skools, the package provides separate modules for budgeting, purchasing, cash receipts, accounts payable, general ledger, payroll, personnel, attendance, grade reporting, scheduling, census and taxes, a spokesman said.

The software was designed to run on Prime Computer, Inc.'s Information; Microdata, Inc.'s Reality; Applied Digital Data Systems, Inc.'s Mentor; and Datamedia Corp.'s 932 computers.

A package that includes all software modules costs \$61,000 from Keystone at 400 Cooper Center W., N. Park Drive, Pennsauken, N.J. 08109.



Software Management Tool Introduced To Track Documentation Changes

GOLETA, Calif. — A Change and Configuration Control (CCC) environment designed to keep track of software documentation changes has been introduced by Softool Corp.

Intended for use on equipment from IBM, Digital Equipment Corp., Data General Corp. and other vendors, CCC is described as an interactive tool that supports

automatic program reconstruction, archiving, compression, encryption and automatic backup and recovery. It includes an editor and provides interactive tutorials for training and can handle programs written in any programming language, the vendor said.

CCC is part of Softool, an integrated set of tools for software management, de-

velopment and maintenance. A permanent license for the software, including one year of maintenance, costs \$30,000. Lease plans also are available, the vendor said from 340 S. Kellogg Ave., Goleta, Calif. 93117.

Package Out for Analyzing Survey Data

TORONTO — I.P. Sharp Associates Ltd. has announced a package for analysis, manipulation and report-

Micr Prices Cut for 1419

DALLAS — Financial institutions using a single IBM 1419 magnetic character reader can now license University Computing Co.'s (UCC) Super Magnetic Ink Character Recognition (Micr) check-processing software at less than one-third the previous price. The new price is

\$17,500.

Also, users running multiple 1419s can obtain SuperMicr for half its original selling price, the vendor said.

The UCC product runs under both IBM DOS and OS. The firm is located at UCC Tower, Exchange Park, Dallas, Texas 75235.

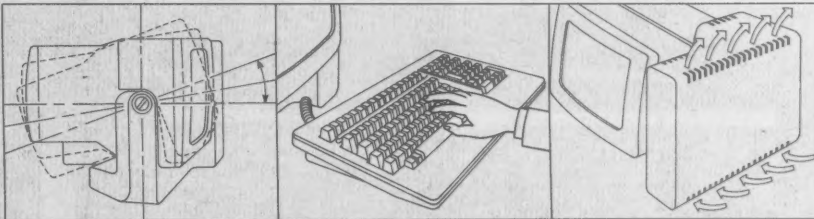
ing of survey data.

Called Xtabs, the software reportedly uses English-type commands for handling discrete and continuous data, running reports interactively and in batch and printing and storing.

A spokesman said that after data has been input, reports can be produced by typing one-word commands. Features include one-way frequency counts to multidimensional cross tabulations; seven types of totals and associated percentages; statistics such as mean, standard deviation, chi-square and probabilistic measures; restricted sample base specification ability; and weight frequencies with corresponding raw scores, the spokesman said.

Xtabs is available on a time-sharing basis for 70 cent/thousand characters transmitted plus connect fees. The package is available to users of Sharp Associates' APL with a permanent license priced at \$40,000 from Sharp at Suite 1900, 2 First Canadian Place, Toronto, Ont., M5X 1E3.

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Productive office work depends on people and their equipment working efficiently together. That's why we have engineered the exciting, new TeleVideo 970 to perform better than any other terminal.

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 **TeleVideo Systems, Inc.**

'MSI Basic' Introduced

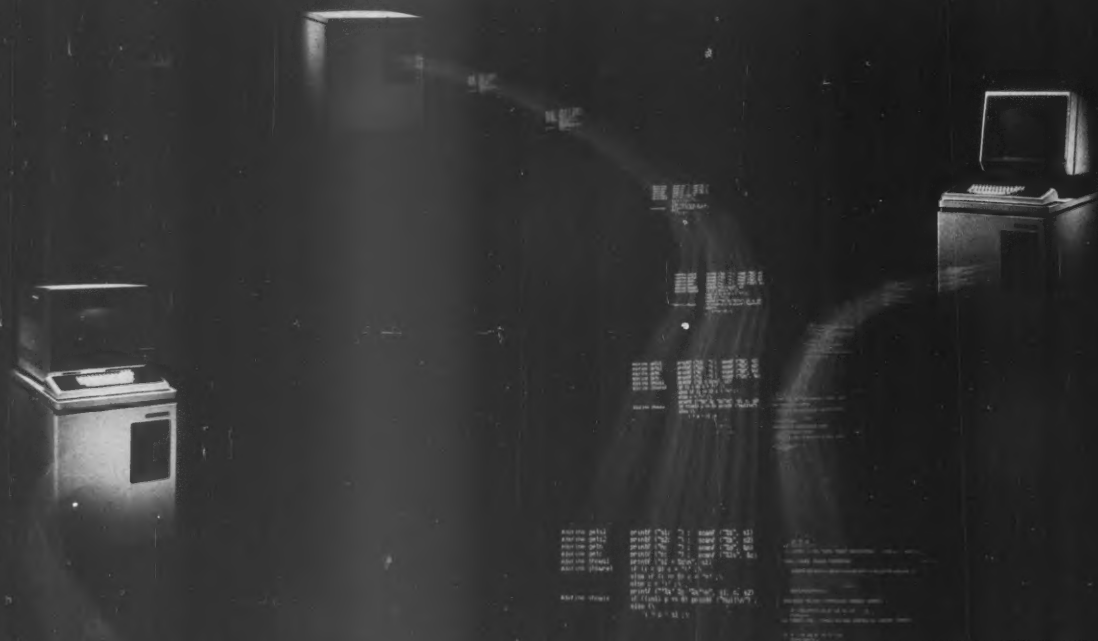
COSTA MESA, Calif. — MSI Data Corp. has developed a Basic Language System software package said to simplify the creation of customized application programs for the firm's handheld source data entry computers.

The MSI Basic software, contained on two 5¼-in. floppy diskettes, creates, modifies, edits, tests and compiles application programs on either an Apple Computer, Inc. Apple II or Apple II+ personal computer or MSI's Application Development System, which utilizes a Cromemco, Inc. microcomputer.

The corrected and compiled program is then downloaded into an MSI handheld data entry computer, a spokesman said.

The initial license fee for the system is \$1,500. This price includes a 300-page user reference manual, the spokesman said from 340 Fischer Ave., Costa Mesa, Calif. 92626.

Domain Processing:



now available in 16 million colors.

APOLLO'S NEW DN600 HIGH PERFORMANCE, FULL COLOR GRAPHICS COMPUTATIONAL NODE PUTS UNPRECEDENTED POWER ON YOUR DESKTOP.

The DN600, latest in Apollo's rapidly growing family of nodes for engineering, scientific, and CAD/CAM users, provides performance and flexibility unavailable in any other computer graphics system. The DN600 uniquely integrates a high performance superminicomputer with a full color graphics system, eliminating the performance bottlenecks associated with traditional processors and stand alone graphics terminals.

Like all Apollo nodes, the DN600 has a 32-bit central processor, 16 million bytes of virtual address space and support for up to 3.5 million bytes of main memory. In addition, the new color node has up to 2 million bytes of dedicated display memory, more than the total capacity of many other computer systems. Display memory can be used to store fonts, graphic templates, parts of oversized images, or the next image in an animated sequence. The DN600 provides 320 million-bit-per second area fills, so the entire screen can be changed in about 1/30 of a second.

The DN600's 19-inch, high resolution display offers a selection of more than 16 million colors and lets users select from seven interactive and imaging modes. Users can choose from a combination of 1024 x 1024 and 512 x 512 pixel resolution and 4, 8, or 24 planes for different levels of color selection.

The DN600 is ideal for applications such as computer-aided design, where high resolution and fast response times are essential; and for solids modeling and imaging, where users build high quality graphics with many colors and subtle shading.

The DN600 is fully software compatible with Apollo's monochromatic DN400 or DN420 nodes, and can be added to any existing Domain network.

And the new DN600 node costs under \$60,000, far less than the price of any other 32-bit computer with comparable color graphics capability.

NEW DISTRIBUTED DATA MANAGEMENT SYSTEM TAILORED TO THE NEEDS OF ENGINEERING AND SCIENTIFIC PROFESSIONALS.

Apollo's new Domain Distributed Data Management System (D3M) is the first truly distributed database management system available from any computer manufacturer. It combines the efficiency and performance of a CODASYL-compliant DBMS with the flexibility of a relational interface. Its applications range from a personal electronic file cabinet to a full mainframe-level, shared database.

D3M works exactly the way engineering and scientific users work, allowing members of a design team to create and update a database to store their own information. It's much easier to use than traditional "top-down" systems with predefined structures and centralized approaches. And with D3M, users can access each other's databases or combine them into a larger total data resource accessible to other groups, such as manufacturing and marketing.

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The high-productivity Domain programming environment includes ANSI-standard FORTRAN 77, Pascal, and C; a wide range of standardized software tools; and a highly consistent, yet flexible command environment. A SIGGRAPH CORE graphics package and a comprehensive set of graphics primitives help speed application development. Apollo's IBM 3270 and HASP emulators provide communications with central computer systems.

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A growing library of third-party software provides support for scientific, engineering, modeling, CAD/CAE, and decision support applications. The library includes packages such as MSC/NASTRAN and ANSYS, two comprehensive and highly regarded finite element analysis programs; PATRAN-G, a powerful interactive finite element pre- and post-processor; SCRIBE, a versatile and easy-to-use text formatting and document production system; and DISSPLA and TELL-A-GRAF, the leading data representation graphics software packages.

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The Apollo Domain distributed processing system is unique in its ability to combine a powerful, mainframe-like architecture, high resolution bit map graphics, and a high performance local area network. The Domain processing system consists of a collection of low-cost 32-bit workstations, each capable of running very large and complex applications. All workstations share a common network-wide virtual memory operating system that allows users to share resources—data, programs, files, and peripherals—transparently, across the network.

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'Force' Version 1.A Out Under Iris Revision 7.5

IRVINE, Calif. — Point 4 Data Corp.'s automatic programming system called Force Version 1.A will reportedly be released under Revision 7.5 of the Iris operating system.

Distribution of Force 1.A had previously been restricted to users of Iris R8, the latest upgrade of the operating systems.

The Force 1.A source code

generator implements a number of enhancements, the vendor said, including a report generation facility that can access multiple files, performing virtually unlimited calculations, statistics, record selection and break functions at each file access.

This product is available for \$3,000, the vendor said from 2569 McCabe Way, Irvine, Calif. 92714.

Tandem Users Get 'SPSS'

BOULDER, Colo. — American Research Corp. (ARC), based here, and SPSS, Inc. of Chicago, have jointly announced the availability of the SPSS Data Analysis System for use on Tandem Computers, Inc. machines.

Using SPSS for performance evaluation, users can reportedly monitor and improve operations while simultaneously tapping the information already stored in each user's data base. The system is also intended for data analysis and decision making, the vendor said.

ARC said that pricing for the SPSS Data Analysis System will begin at \$12,500 for a first-year license. Additional information can be obtained from ARC at 4465

Grinnell Ave., Boulder, Colo. 80303.

System/34 Gets 'Access'

BELLEVUE, Wash. — Mini Development Corp. has announced a programmer productivity aid for IBM System/34 users.

Called Access, the package is said to be a set of programs that allow RPG-II programming in an on-line environment. Access allows the programmer to view the RPG-II compilation.

The package is available for \$175 from Mini Development at 1545 134th Ave. N.E., Bellevue, Wash. 98005.

IBM 3033 CPU Space Leased

CUPERTINO, Calif. — Tymshare, Inc. has announced a service option said to allow customers to rent a portion of one of the company's IBM 3033 U-12 computers at a fixed monthly charge.

The customer contracts to be the sole user of a slice of a CPU.

The starting price for a 5% slice is \$17,000/mo, a spokesman said from 20705 Valley Green Drive, Cupertino, Calif. 95014.

Micro Notes

Radio Technology has announced a software package for the IBM Personal Computer that reportedly allows users to print a screen image with one key-stroke. Called **Printscreen**, the package is said to support 256 text characters, monochrome and color displays, reverse video, underlined text and nondisplay fields. The package requires IBM DOS, a minimum memory size of 48K bytes and either a Graftrax-equipped IBM dot matrix printer or Epson America, Inc.'s MX-80, MX-80F/T or MX-100 printer. The software costs \$65 from the firm at Suite 111, 8 N. Main St., West Hartford, Conn. 06107.

Public Key Systems, Inc. has released a **key encryption/authentication system** for users of Zilog, Inc. Z80-based microcomputers running under Digital Research Inc.'s CP/M or MP/M operating system.

The package is said to allow users to encode sensitive data that is correctly formatted for transmission over telephone, Telex or TWX lines. A two-key system allows anyone to encode data, but only users with knowledge of a secret key to decode it, a vendor spokesman said.

The package costs \$250 and is distributed by Standard Software Corp. of America from 10 Mazzeo Drive, Randolph, Mass. 02368.

Interaction Systems, Inc. has unveiled a touch-sensitive software package for users of IBM's Personal Computer or North Star Computer, Inc.'s Horizon computer. Called **Interaction Systems Transaction Editor (Isite)**, the package requires the company's TT-100 touch terminal for the North Star and the TM-120 touch monitor for the IBM.

Isite allows data to be entered on a page-by-page basis, a spokesman said. Pages can then be linked in any sequence to develop channels of information. Users can move from general to

specific categories by touching screen menus. The software costs \$2,495 from Interaction at 24 Munroe St., Newtonville, Mass. 02160.

Edas IV is a macro assembler that is said to generate absolute code from Zilog Inc.'s Z80 source-in-memory and multiple files. Source files may be nested to five levels, a spokesman said. Edas supports an automatic Isam search of a partitioned data set library to resolve undefined references at assembly time to provide library linking, the spokesman added. It also provides 15-char. labels, concatenated constants, local labels, assembly-to-memory or disk and the ability to create core image files. It

costs \$100. Both packages are available from Misosys, which can be reached through P.O. Box 4848, Alexandria, Va. 22303.

Misosys has also announced a product for the Radio Shack TRS-80 Model I and III microcomputers. A C-Language compiler called **LC** is said to support I/O redirection, command line arguments, dynamic memory management and sequential files for read, write and append. Floating-point routines in read-only memory are accessible via function calls supported in the floating-point library. The installation library supports graphics routines, string routines, port I/O and other functions. The package costs \$175.

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Thirty years ago, when John

Diebold published his groundbreaking book *Automation*, he attracted international attention and was soon hailed as the nation's top authority in the new field. He was 26 years old.

Diebold's fascination with automation began during World War II when, on active duty in the North Atlantic, he became intrigued with remote-controlled automatic tracking and firing systems. Later he earned an engineering degree from the U.S. Merchant Marine Academy, an economics degree from Swarthmore and an MBA from Harvard, where he led a research group on factory automation. That work became the cornerstone of his pioneering book (see *In Depth* 77).

Convinced that computers would usher in a new industrial age, he built his entrepreneurial efforts on them. In 1954, after a year with the prestigious consulting firm Griffen-

hagen & Associates, he formed John Diebold & Associates, Inc. in the Weehawken, N.J., house where he was born. By 1957 the firm was so successful, it bought out Griffenhagen.

Today the Diebold Group, Inc. is an international management consulting firm headquartered in New York, with offices in 14 cities on three continents. Its clients include major corporations as well as city, state and national governments here and abroad. Diebold has also founded several related companies and a public policy foundation, the Diebold Institute. He is director and trustee of numerous public and private organizations and has the Rothschilds as partners in France.

Several books have been written about Diebold and his work. He has appeared on the cover of *Time* and has been profiled in *Esquire*, *People*, *The New York Times* and *Busi-*

IN DEPTH

JOHN DIEBOLD

Talks About Information Management

You were one of the first proponents of information resource management, or IRM — the management of information as a corporate resource, like capital or equipment.

In 1977 the Diebold Research Program concluded a study that showed 84% of the top corporations surveyed had no overall information policy and were "only beginning to get an inkling" that such a corporate policy was necessary. The survey indicated that the information policy idea was a long way from taking hold.

Five years later, is the idea gaining greater acceptance?

I don't think that most senior managements are conscious of the existence of IRM. There is still a very incomplete structure in terms of a bridge between the computer and data base management and the management of an enterprise.

It varies by organization. Some have a total understanding of IRM, but in most, there is very little or no understanding, or what there is is a very departmental sort of thing.

I don't think the *term* is that important, either. That's one of the problems of the whole computer area: applying terms to things — MIS, IRM or whatever else. These terms become top management's labels for doing anything with computers; I don't think there's too much understanding of all the fine gradations.

Why is it so important to establish a corporate information policy?

To move ahead, the manager of the enterprise — whether it's a public agency or a private business or a nonprofit agency — must think in terms of using computers and communications, information technology in general, to help achieve the mission of the enterprise.

And I think the bridge between the people who understand information technology and the people who direct the enterprise is not well constructed.

There are a few places where it exists, and there are a lot where there are pieces of it. But mostly, the whole computer and information technology area is still thought of, I think, as handling former paperwork — not yet in terms of: How do we reach our market in a new way? How do we serve customers and achieve our objective as an enterprise in a different way by use of this new technology?

I think the salient fact of the '80s is *that's* the big bridge, that's the big structure that hasn't been completed — and has to be, before you see any kind of major shift in the role of information technology. And what label will be applied to that, I'm not really sure.

The difference I see between IRM and MIS is that IRM suggests a centralized, corporatewide policy, while MIS has been



ness Week. His life and work were the subject of a recent German TV special, and he has appeared on radio and TV shows here and abroad. He was also one of the subjects of Ross Firestone's *The Success Trip*, published by Playboy Press in 1976.

At home in the seats of power, Diebold has been acquainted with every U.S. president since Eisenhower and numerous foreign heads of state. He has been decorated by the governments of Jordan, Malta, Italy, Austria, West Germany and, most recently, France, where Francois Mitterand named him Chevalier of the Legion of Honor last June.

At Diebold's stately Bedford, N.Y., home, where the following interview took place, one finds scant evidence of the Computer Age. The 16th-century bricks, mantels and paneling were transplanted from Cassiobury Hall,

Hartfordshire, England; home of Queen Elizabeth I's favorite, the Earl of Essex. The computer futurist collects antiques and art relics — and he owns no computer. "In fact," he notes, "I didn't even own a television until recently, when Barbara Walters gave me one."

Although credited with coining the word automation, Diebold is the first to point out that the word had been used previously at the Ford Motor Company to describe automatic handling of machine parts. His innovation was to use the word automation in its present, broader meaning: information technology, an amalgam of computers and communications. Then as much as now, Diebold's career has been to look beyond the machinery and understand technology's ripple effects: for business, for society and for the individual.

— Catherine Marcenchi

IN DEPTH

thought of as something departmental ...

Yes, you're absolutely right on the difference. But I don't think that most senior managements understand the difference.

The Diebold Group calls IRM a direction-setting concept. We're not proposing there be a new "czar of information," which unfortunately was picked up by a lot of people as an easy target — a kind of paper tiger. What we want to do is put the focus back on information, with the technology simply a means of managing that information.

The direction of technology today is such that if you don't focus on information, the technology is irrelevant. It's an enormous problem today, and the introduction of personal computers in companies brings it home. We have so many dilemmas because we focus on the hardware, on the technology — not on the information, how it is used.

So we constantly go back and rethink that whole process. The IRM concept will help create that move, help create a different way of looking at information, to open up a new lens. But unfortunately, some big MIS organizations — I don't mean to criticize them — some did quickly change their label to IRM! But nothing fundamentally changed.

How does the present-day MIS director become involved in the direction-setting process? Should his role be redefined?

I think that's an important factor. You're getting the shift in the role of the MIS manager toward being a corporate policymaker, part of a traditional corporate-staff-type function, where one is basically setting policy with regard to information in the organization. He is involved less in "running the factory," that is, the computer operations, and lets that become much more decentralized.

Where that function reports is not at all clear. I don't think we as a firm have a very strong position on that, either. It all depends on the situation and the enterprise.

Organizational structures can be successful in many different forms. Some of the MIS functions can be successfully handled in very

different ways, depending upon the enterprise, its culture, its mission, its history, where it is. But typically the top MIS officers are going to be concerned a lot more with policy issues, a lot less with

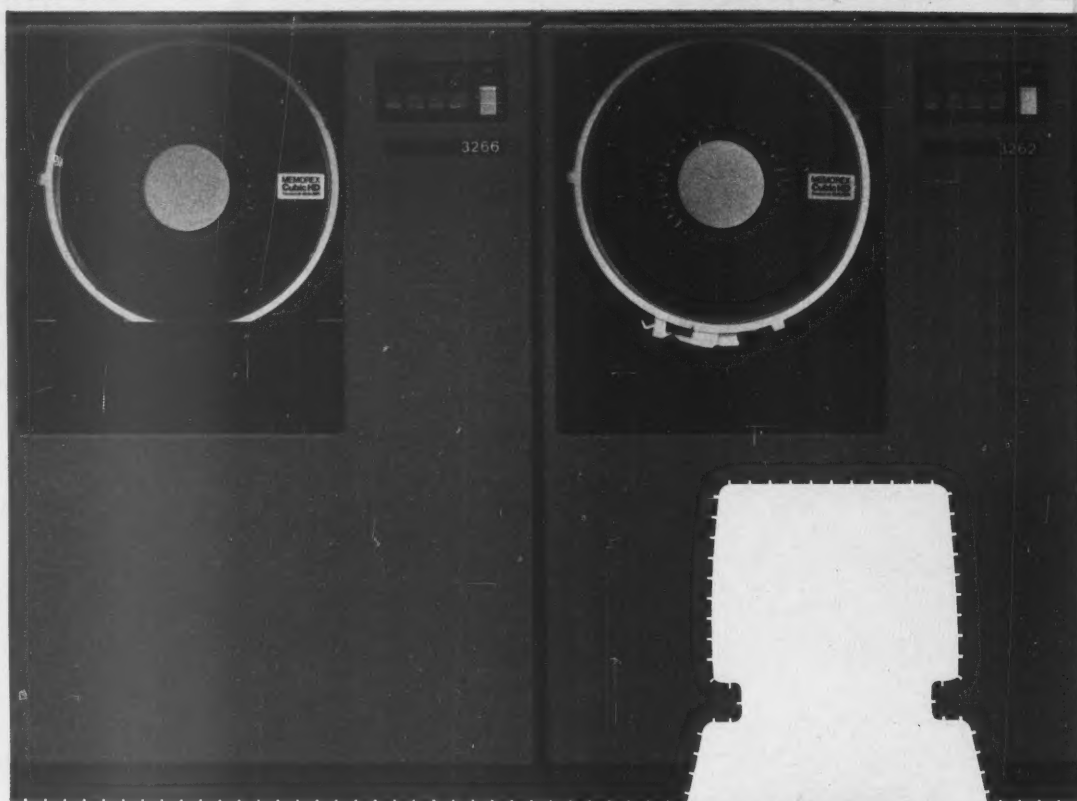
operational issues.

With the decentralization of computer resources, especially in the form of microcomputers, how is it possible to maintain central

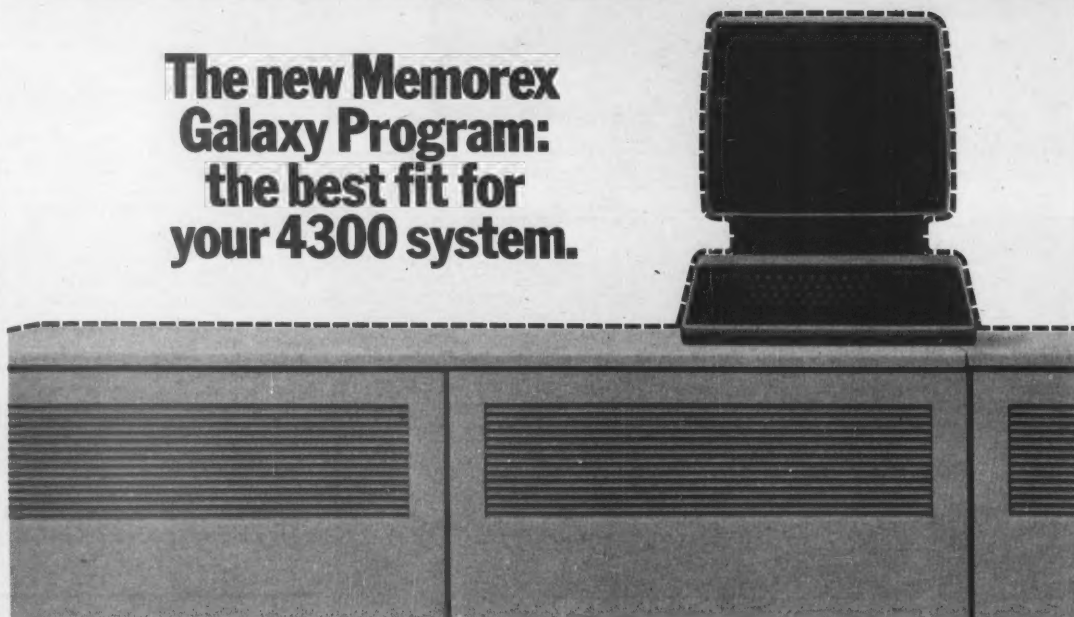
control over corporate computer resources?

From a de facto standpoint, regardless of what the formal policies are, there's enormous decentralization going on.

Your real question is, "What should the boundary lines be?" Where do you want corporate policy to control some of these personal computers and where do you not care, and let it go down into the



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IN DEPTH

divisions? That depends again on the situation.

I guess one ground rule is that where corporate information is concerned, you want to control the policies relevant to it, whereas if

there is information relevant to an individual job or department, that does not involve corporate information, you don't care. You obviously at some point want to introduce certain policies for

procurement of equipment and software, but not where you feel this has to be locked into that corporate system.

That's the sort of issue the MIS manager needs to be spending more and more

time with.

There's a little bit too much of a rush to find organizational solutions as opposed to policy solutions. But there's no question that the increased introduction of

personal computers into companies is really putting an edge on this issue of when a data base belongs to an individual and when it belongs to the corporation. This personal computing trend will be, I think, an accelerator of policies around managing information as a resource.

With the current emphasis on "user-friendly" tools, fourth-generation languages and personal computing, end users are not only accessing and controlling data directly via terminals, but also generating applications. Will end-user computing require new information management principles?

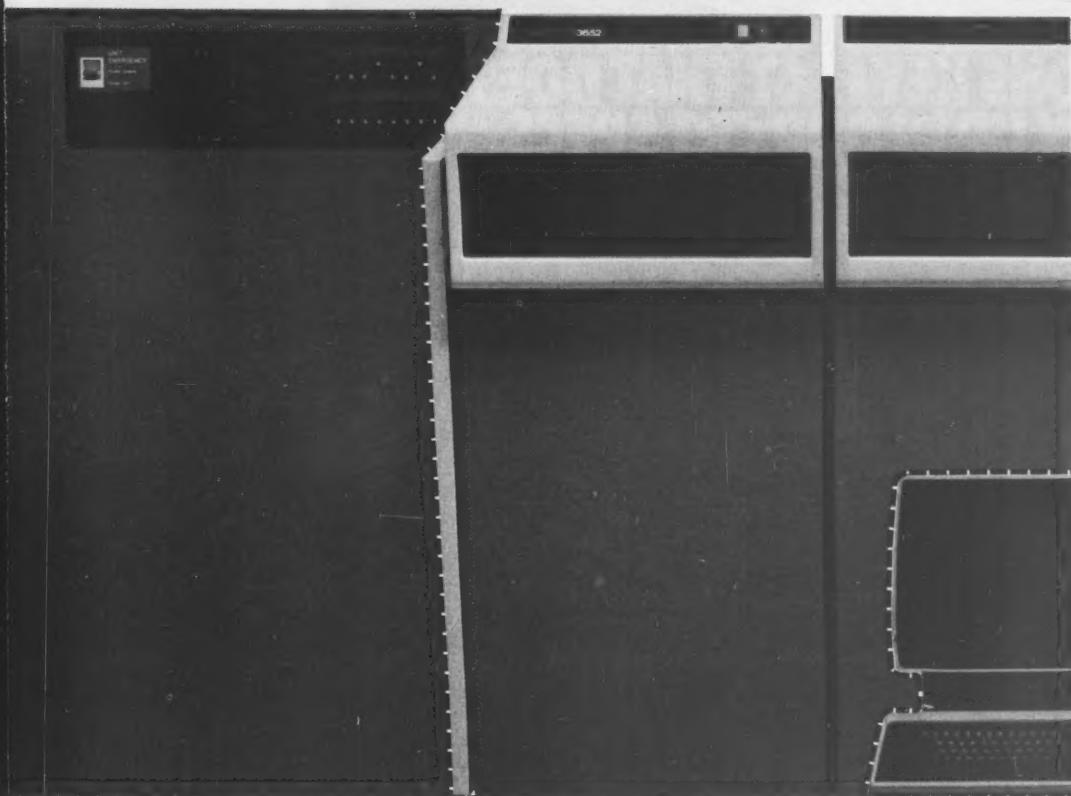
I think so. In the past, a lot of the logic relative to MIS used to come from the binary logic of computers — end users were told to either do it under MIS' rules or not do it at all. What we see as we look at the next decade is really a range of relationships between the traditional MIS function and end users — and we use the term "end user" with some hesitation, because the users are participants in the development of their systems.

Because of the increased knowledge of computers and the different scale of what users want to do and *can* because of the changes in technology, we've seen now that a relationship can be negotiated between the hoarder of the basic resources and the user department based on their combined skills and not based on some arbitrary notion of the MIS function's responsibility. And that's a major change, I think, in the role of the MIS function.

So with the new tools that are coming into existence today, and the major kinds of applications — decision support systems, modeling systems — the old architectures and the old approaches don't support that environment. We'll see a dramatic transformation.

A major challenge is to retrain, to remake MIS professionals so they can view themselves in a different light. Their role is going to change. They've worked so hard to be where they are, and now a lot of the new systems require a different role, a different kind of skill. And they're very resistant to it.

The MIS executive is sitting on top of this heap and



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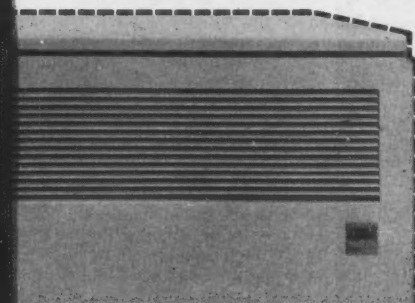
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he's got the "old world" technologies built up and the capability around them. He's got a new-breaking world that revolves around new technology as well as the old

— new kinds of demands, where he's moving from a computer per company or per division to now a computer per person. The MIS executive is sitting over this

transition and has to deal with an enormous reeducation process as well.

So it's not easy. You don't have given solutions. You have to rethink them.

What I'm hearing is that you're not suggesting a single organizational structure that's right for everybody. You're not proposing an IRM hierarchy.

Our first concern, in policy-level considerations, is acceptance of the concept. And then where you house that concept is a function of the organization. That responsibility can be and has been put in several different organizational areas.

In individual consulting assignments, we do give very detailed organizational recommendations and then also write the specifications in terms of position, descriptions and responsibilities. We feel really that what works for one organization may be entirely wrong for another. It's wrong to try to generalize too much.

How, then, should MIS directors think in terms of plotting a career path?

You're getting more and more MIS directors who don't come from the MIS field, which is natural at this point, because information technology is getting very central to how effectively the organization can function and how it competes. More and more organizations are putting line managers who are essentially line managers of the organization, not specialists of MIS at all, in charge of the function. I think that's a very healthy development.

Now, some MIS officers may not feel it's a very healthy development, because they have spent their whole career as MIS specialists. But they ought to drive hard to acquire a thorough understanding of general business and make sure their own managements realize what they're doing so they get more exposure to other parts of the business.

I think the big hurdle that business is in the process of trying to cross is to use computers and communications technology to further the mission of the enterprise in new ways — often very new ways. There you need the entrepreneur to understand what the potential is. You get the best of both worlds if you take a line manager who wants to become CEO and route him through the MIS operation so he understands that there are totally different ways his company could serve its customers.

I think you've started to see changes in the financial community, as a result of information technology. In the publishing world it is shortly

(Continued on In Depth/8)

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Diebold Remembers John von Neumann, Norbert Wiener, a 'Lone Figure'

During his years at the Harvard Graduate School of Business Administration, 1949-51, John Diebold came under the tutelage of General Georges Doriot, a professor who urged him to go out and meet with the greatest thinkers of his day. Diebold's research for this school project was to be the basis of his first book, *Automation: The Advent of the Automatic Factory* [Van Nostrand, 1952], which brought him acclaim as the man who coined the word automation.

Since then, Diebold's path has crossed with those of virtually all the leading figures in the information technology arena. In his Park Avenue office, he shared some of his memories with *Computerworld*.

Tell me about your meeting with John von Neumann.

Well, I had been doing a paper for General Doriot, and he had suggested people I should see as part of my research — John von Neumann, Norbert Wiener and others. So I had written to von Neumann and asked if I could come to Princeton and see him during Christmas vacation time.

I remember it very dramatically. The snow had just fallen, an absolutely perfect cover of snow on the long tree-lined entrance coming to the Institute for Advanced Studies. And from John von Neumann's office I could see a figure trudging in the snow. An almost surrealistic scene — this lone figure in the unbroken snow. As the figure got closer, I realized it was Albert Einstein! If only I had had a camera...

In the session with von Neumann, I asked, "Could you use automatic control devices and computers for factory control?" I outlined the sort of thing we were interested in, having a computer provide override control and coordination on all the individual factory operations. He went to a blackboard and wrote some equations, describing things that were far beyond my understanding of mathematics. He would pause occasionally and ask, "Isn't this right?" or "Isn't that right?" — I mean, here was the greatest mathematician in the world asking me if he was right!

After a while, he said computers would be able to do that and, yes, as computers developed, theoretically the whole thing should work. And I said, "What are you going to do about that?" And he said, "I'm not going to do anything about that — you go and do something about it! I'm happy knowing it can be done. I deal in theory. You go deal with the problem of making it happen."

He figured it all out, right there?

Yes! And he was going into a very rarefied area. You see, in factory or in

"The von Neumann meeting was very important. All kinds of people were saying you couldn't control a refinery or a chemical plant with computers, and here he had proved very clearly you could. I felt it important to know that an outstanding man who knew what he was doing had said, 'Yes!'"



discrete processes, where you're moving things around, there I think it's pretty clear what's involved in applying automation and computer controls. What *wasn't* clear to me then was whether the dynamic processes of a big oil refinery or a chemical processing plant, where you had all kinds of chemical processes going on — whether that was the sort of thing you could control. He was able to apply some order of simultaneous differential equations and say, basically, that was something computers would be able to do.

I was very impressed. Obviously, he was a great genius, but also he was willing for a graduate student — someone who was not a student of his and not a mathematician — to sit down with him that way. I learned a lot from that.

Who else did General Doriot suggest you see?

Prof. Gordon Brown at MIT, who was

the dean, I think, at that point. He had written the great book on servomechanisms.

I found you could indeed call these people and say you were a student and what you were about, and they would give very warmly of their time.

The funniest one was Norbert Wiener [the father of cybernetics]. A very docile sort. I came to his office, and they had been moving furniture to paint. There was absolutely no place to sit down. And Wiener simply stood in the middle of the room and wanted us to start our talk! The secretary, who had been dealing with him for years, came and took him by the shoulders and said, "We've found an empty classroom," and she led him away and sat him down. Then he very meekly asked her, "Now?" And then we began!

At that point I had begun using the word automation. I had been typing a paper, and because I can't spell, I had been using that word instead of

the accepted term, automatization. We talked a little about that. Wiener didn't like the word automation at all. He felt that it was a cross between a word of Greek and a word of Latin derivation and that it would *never* catch on. He had already been using the term cybernetics. That seemed to me to have one set of meanings, and automation a different set.

The von Neumann meeting was more significant, I think. It was very important. All kinds of people were saying you couldn't control a refinery or a chemical plant with computers, and here he had proved very clearly you could. I felt it important to know that an outstanding man who knew what he was doing had said, "Yes!"

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One of the things that surprise me is the number of people who still confuse the Diebold Group with Diebold, Inc., the banking machine manufacturer. Has that ever been a problem for you?

help your fledgling business?

Oh, I remember one dramatic occasion in the very beginning, when I first started the business out of my house in Weehawken, N.J. There was a check deposited to our account, somebody's payment for a bank vault! Here we were, a business operating out of one room, and suddenly there was this enormous increase in working capital!

Diebold, Inc. is a client of ours, and has been for many years — we've done some planning work for them. But no, they're no relation. And people constantly do confuse them.

Did that confusion hinder or

I don't think there was any help from having that name. I think people knew me in my own right. I don't think there was any problem, either, because their automated teller machines were only a very late development. They initially did filing cabinets and bank safes and doors for night deposit boxes in banks. So I don't think there was ever any real identity problem.

There aren't many Diebolds around. There's the banking family in Buffalo, also no relation. But in the public policy field, I still find people who don't know my brother William is one of the main authorities on international economics and trade. We still find people we both know independently who have never put together the fact that we're brothers. That's constantly happening.

(Continued from In Depth/6)

going to be happening, where you totally change the modes of information delivery. And you see the early stages of that struggle, with some publishing companies combining print and electronics. It's basically an industry that's going to change the way it reaches customers as a result of information technology, but doesn't quite yet know how.

There'll be a lot more of that going

on in other fields. I think information technology is going to affect how the insurance industry functions. And it will affect manufacturing: If you can't understand and establish the link between the manufacturer's information system and the factory automation side, you're not really going to do very well in manufacturing.

I think in the '80s and '90s, MIS will not just involve processing the information, to conduct business in its essentially normal way, but it will change materially the way the business delivers products and services to customers, how it meets markets, how it responds to market opportunities. And that has to involve the entrepreneurially oriented line managers.

From the MIS officer's standpoint, that's what his job ought to be. If he wants to advance to top management in the business, he absolutely has to get a totally different route of development, not purely MIS.

If the MIS people don't get accepted by and become part of general management, they're going to play an increasingly specialized role in that world. And it's essential, if they want to play a more central, more vital role, that they try to get more exposure to general management. In fact, an almost sure way not to get ahead in MIS is to be an MIS specialist.

The technology is changing in such ways, and the options are becoming so wide, that we're going to have the luxury, which is also the challenge, of not being forced to organize the MIS function because of the technology. Now the technology offers so many options that we can

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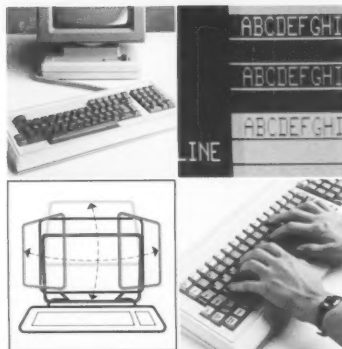
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Menu Set-up	Yes	No	No	No	No
Line Drawing Set	Yes	No	No	No	No
Detachable Keyboard	Yes	No	No	Yes	No
Low-Profile Keyboard	Yes	No	No	No	No
Separate Programmable Function Keys	4	0	0	0	0
Switching Power Supply	Yes	No	No	No	No
Screen Tilt	Yes	No	No	Yes	No
Screen Rotate	Yes	No	No	No	No
Line Block Transfer Mode	Yes	No	No	No	No
Page Block Transfer Mode	Yes	No	No	No	No
Unprotected Block Transfer	Yes	No	No	No	No
Screen-saver Time Out	Yes	No	No	No	No
Insert/Delete Line	Yes	No	No	No	Yes
Insert/Delete Character	Yes	No	No	No	No
Clear Unprotected	Yes	No	No	No	Yes
Forward/Backward Tab	Yes	Yes	No	No	Yes
Column Tab Positions	80	80	0	0	0
Print Key	Yes	Yes	No	No	No
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use other organizing principles that are far more important to the corporation.

SYSTEMS ANALYSIS METHODOLOGIES

In 1965, Mary Stephens-Caldwell Henderson reported on some of the roadblocks you saw to effective use of technology [Managerial Innovations of John Diebold, LeBaron Foundation]. A first and major obstacle you described was the lack of a coherent methodology of systems analysis — a synthesis of techniques to provide an analytical basis for sophisticated management information systems.

Have we arrived at such a methodology today?

No. And I really hate to think that what I said about methodologies 20 years ago, that we needed some kind of synthesis, is still true today. But no, I just don't see it.

The analogy I used at the time was a kit of tools. We have a lot of individual tools, like a whole lot of carpentry tools put into a kit, but we haven't had any synthesis of these in terms of how one would really use them to understand what an enterprise is and information needs are.

In fact, I think the problem is worse today, because the whole area in which we're trying to implement computer systems has broadened.

When we move into the office environment, for example, we're going into a largely unstructured, or not clearly structured, area. We're very short on methodologies to deal with that area, very very short. The vendors don't have them, the users don't have them; and most of the systems that are in place in office automation call for one.

Software engineering and information engineering are among the terms that spring to mind in this area of methodologies. Is the emphasis on engineering the right approach?

I think you raise a good point. Most systems analysts are computer systems analysts. And they tend to think in terms of engineering, as if you were literally constructing something like a building — taking a certain set of components and tying them together. But you're very much in a human situation, with systems that are much more complex.

So MIS professionals can get excited about that kind of engineering methodology, but they're only looking at one dimension. If you look at the office automation area, what was the systems approach, what was the technician's approach to automation? You hear terms like electronic mail, teleconferencing, executive calendars.

Now if you're an executive and you look at that area to improve it, you don't think in terms of putting

in electronic mail. You think in terms of how you can reorganize that activity. Am I doing what I should be doing? Is there another approach? And those tools have a place, but they're not the only lens through which you look at an area. And some of the information engineering stuff is really only one lens.

In the Nasa project to put a man on the moon, they changed a lot of the rules surrounding how you supervise and how you organize and

how you delegate and how you control, in addition to all the things they did from an engineering point of view. They challenged a lot of conventional assumptions about span of control, about delegation of authority, jumping levels of authority to supervise — which is against all the conventional rules of management. We need the same kind of breadth when we look at systems in companies. Engineering is of value, but it's not the total focus.

If that technician's viewpoint is just "one lens," as you say, what other possible lenses are there? What other directions are there?

One of the things you see happening in some organizations — and people react to this in different ways — is the emergence or reemergence of the business analyst. Someone to look at an organization's reason for being, analyze its mission and its organization, what information it depends on

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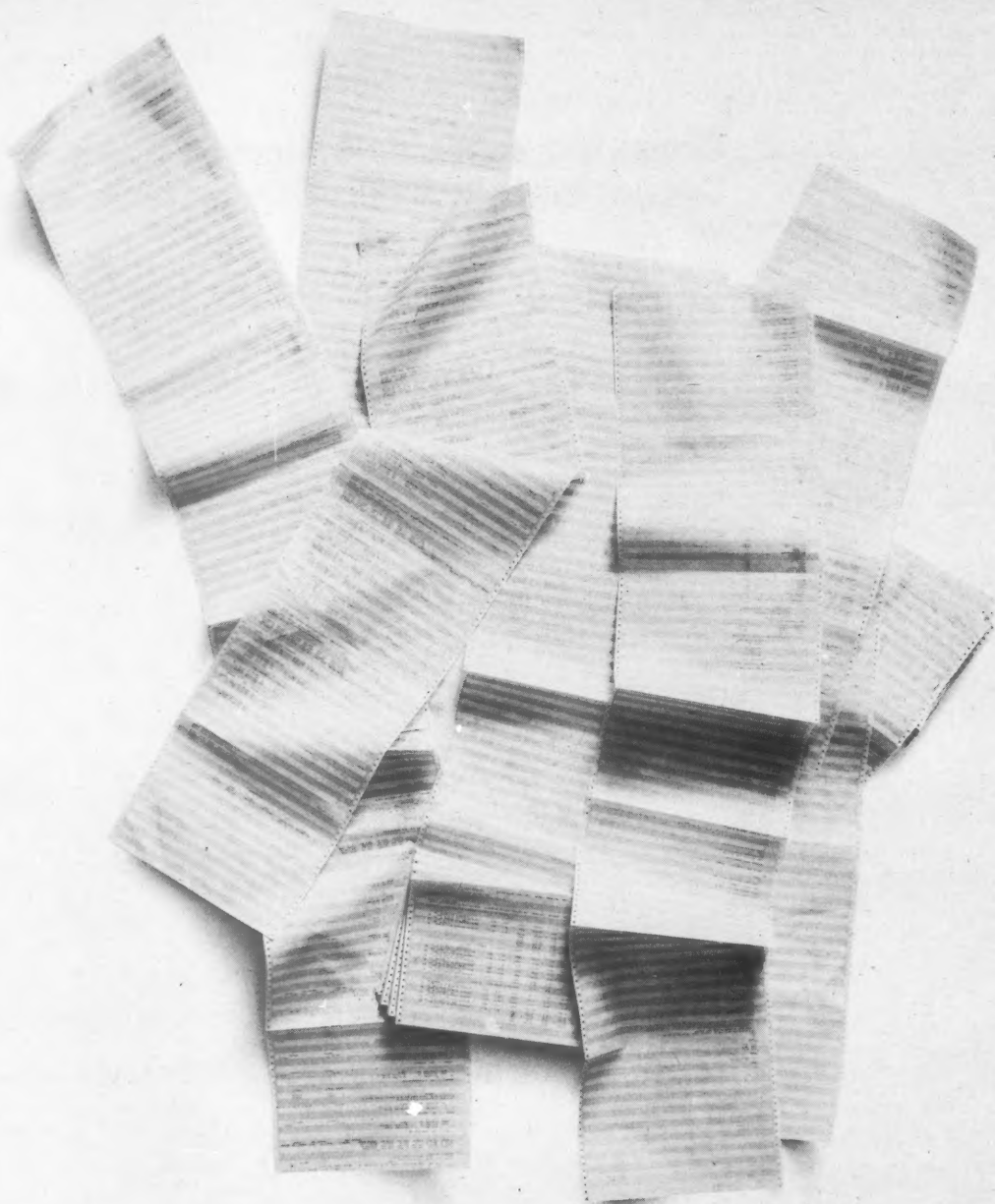
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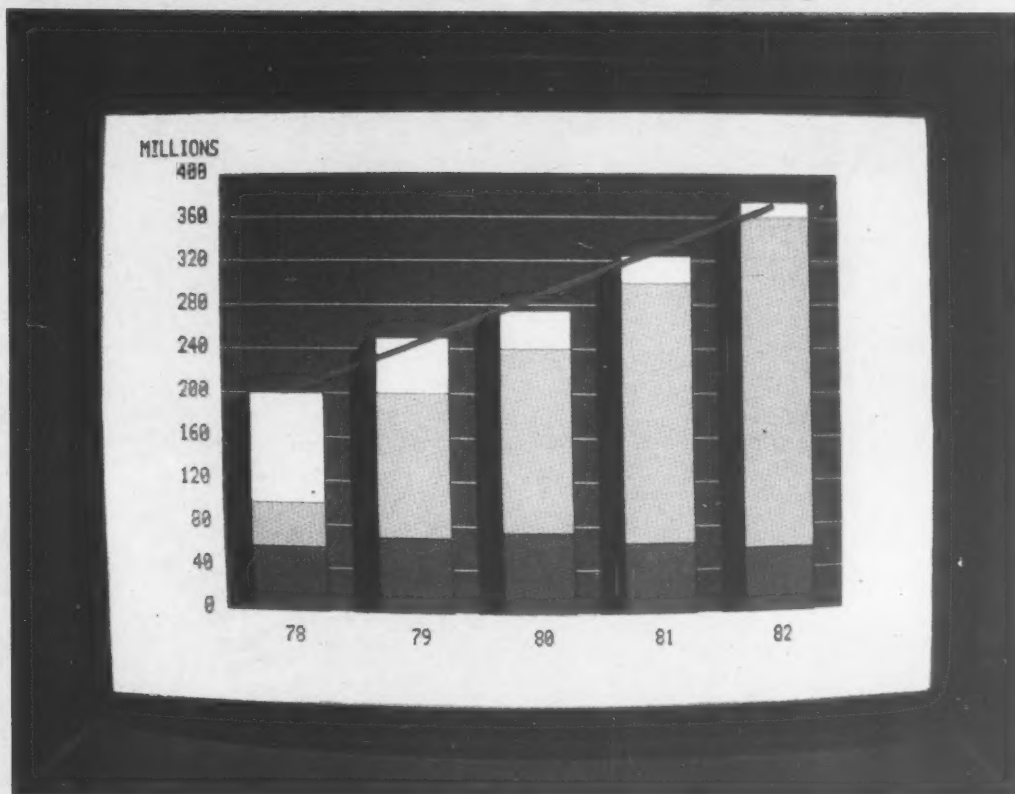
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— and not simply information transfer. And only after analysis does one then begin to look at the various tools and technologies that can be used.

Many companies don't feel that their systems analysts who've been working with computers for years are capable of making the transition to being business analysts, to go beyond interpreting everything in terms of what they can do with the computer.

As we move to the new technology, the business analyst wouldn't have a vested interest in a particular kind of technology or approach for that situation. In fact, that's a major transformation of the MIS function: What used to be the systems analyst in the MIS department will move much more to a consultative role than a doing role. He'll be out there helping customers, if you will, or users, to define their problems and how they might solve them.

DECISION SUPPORT SYSTEMS

One of the new tools for MIS "customers," as you call them, is decision support systems, or DSS. As early as 1955, you saw their potential: In an article from *The Manager*, you wrote, "Computers open to management the possibilities of an entirely new magnitude of control over business operations. Savings in clerical costs will be the smallest effect of automation; it is by providing management with better and current information that they will score their greatest gains" [September 1955].

Now, 27 years later, DSS has become a buzzword, but has current technology actually fulfilled the top executive's need for timely, current information?

Well, you know, I listened to a presentation just last week about how these decision support systems work — and not having remembered that I said that in 1955! That's pretty valuable to know!

I think there's no more central factor that comes out of all of our current work on office automation than

'The systems analyst in the MIS department will move much more to a consultative role than a doing role. He'll be out there helping customers, if you will, or users, to define their problems and how they might solve them.'

exactly this point: its real use, the real payoff, is not going to come from the word processing or clerical

areas. Even though that would be a large user group and a large use, the main value is in support activity to

middle management and professional management, white-collar professionals.

There are so many problems — political problems, human and organizational problems — it isn't worth trying to put it in unless the potential yield is large. As support for professionals and middle management, the potential is enormous. And that's worth it.

I would think the difficult question



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IN DEPTH

is what form DSS should take. Should they be elaborate, integrated, million-dollar systems with graphics, ad hoc inquiry capability, all the bells and whistles — and a sleek terminal on the CEO's desk?

I think it would make sense to go at it in terms of specific functional areas where you can see a major yield, rather than trying to do it on a companywide basis. You take a function, whether it be purchasing or engi-

neering or you name it, and put it in to support the management for that area.

I personally think that most of these things, like teleconferencing as well as decision support systems, pay off in the middle management area, in the working professional's area, rather than starting with top management. And there has been this fascination among so many MIS people wanting to put a terminal in the CEO's office. It seems to me that's the

last place you want to get to.

There have been so many times when I've walked into chief executives' offices, and they've got these terminals on behind them — and you know perfectly well that they're show pieces! Other than demonstrating to people something you could do perfectly easily by having a loose-leaf notebook and taking it out — that's about the level of use.

Now, there are exceptions. I think if you're in the grain trading busi-

ness or stock brokerage business or some of the other transaction businesses, there are perfectly legitimate values in having that instant interchange, and that's fine. That's where you should use them. But I'm very negative on the idea of rushing to put a terminal on every CEO's desk.

If you try to move a terminal into a senior executive's office, very often you're going against the culture of the individual. And that's not an educational issue. It's a question of style, how a person operates, how he has already conditioned himself to be successful. And you're asking him to alter that behavior.

I think you should work up to the point where, if you can materially improve a CEO's normal way of working, he will get a terminal. There will be some CEOs who will undoubtedly make use of them.

Peter Drucker said that for the CEO, "a display unit or terminal will be as much a standard office accessory tomorrow as the telephone" [CW, May 19, 1980]. While we may not have reached that stage yet, do you see that as inevitable — a terminal on every CEO's desk?

We will see, I think, if we go after the middle-management level, that as managers proceed up the corporate ladder, they'll carry that technology with them, and they'll understand what they want to do with it. And that's far more sensible.

Should I gather, then, that you do not have a computer terminal or any form of computerized DSS for your personal use?

[laughing] You already know perfectly well the answer to your question, from what I just said. No, I do not.

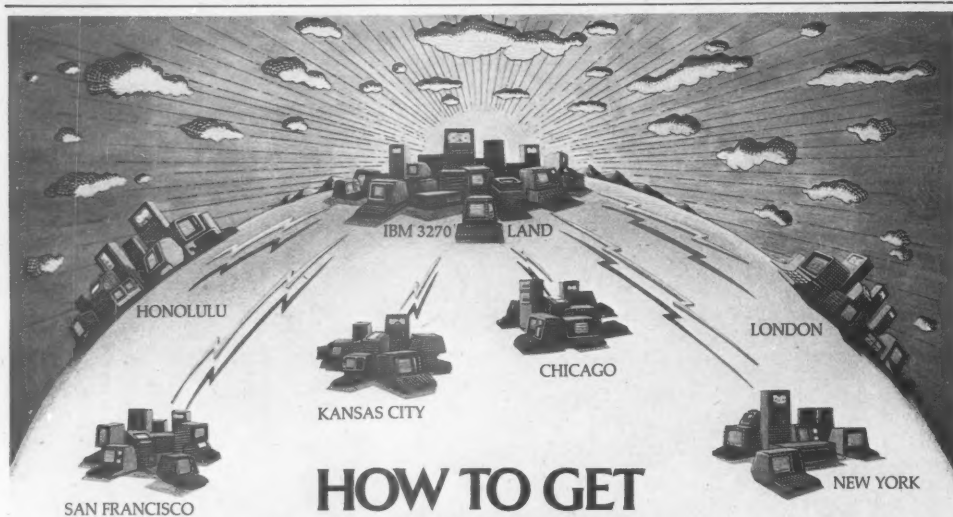
OFFICE AUTOMATION

When you describe DSS as computer-based support for white-collar professionals and middle management, that really overlaps with the concept of office automation. Who should be in charge of office automation?

A challenging question. And the reason it's challenging is because, again, we get caught up with the label. If you go looking for examples of office automation, in a typical billion-dollar company you might find it consists of five or six people, and in a majority of those companies it's reporting to the MIS function — and they call it office automation. That is not the office automation activity that should be going on in many companies.

One of the big problems in that area is the paucity of staff that's been allocated by most large user organizations. And often they're from the wrong side.

Office automation, when it's done seriously, is a corporate effort that uses



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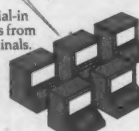


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IN DEPTH

the tools of those five or six technicians as part of the resources to revitalize or reengineer some white-collar area of the firm. If you go into a typical billion-dollar company and look at its office automation functions, you'll see a set of resources that has been parked in the organization someplace — and nothing more. OA should really be a *project* activity, directed at the top, and that's what you have to look for.

So when you ask who will be in

charge, the difficulty is whether we are talking about the activity or about those few technicians who have been labeled "OA" in companies.

With the white-collar work force going from 40% to 55% or 60% of the work force in the next few years, if you consider the costs — you really have to get in and reorganize and bring technology in to make that area more effective. It takes a different approach from what we see al-

ready stabilizing in companies if we're going to make a difference.

From Day 1, we have not argued that OA should report to MIS; that's not the issue. The issue is: How are you going to define it? It's unfortunately one of those labels that become a shorthand for computers and communications. It has a certain value, but then it becomes restrictive.

How do you view the current surge of vendor activity aimed at the of-

fice automation market? Is it premature?

It will be some time before OA takes hold on the scale vendors would like. It's an area with no real experience on the part of the vendors, users and top management.

Companies really in deep trouble may realize they have to do something to improve white-collar productivity, and that trauma may mobilize the OA effort. But it's still a lot easier to cut a thousand people today than it is to enhance the productivity of people by, say, 10%. One is clear, the other isn't.

I don't know how you'd measure that improvement either, especially since automation is likely to change the job altogether. How do you compare the new job with the old?

You can't. In fact, we'd certainly hope the job would change. That's really what we're after: redefining jobs and doing things in different ways and doing new things.

It's a 25-year-old mistake. People want to bring technology into the office, and the assumption is that you're inserting it into the office as is! That approach is just dead wrong — easier than materially changing the way that environment works, but dead wrong.

What about the "office of the future," the "paperless office" — are these useful concepts?

You know, a Pennsylvania manager recently pointed out that the index of my original book *Automation* [written in 1952] had "office of the future" listed in it. That was interesting, I thought.

Again, where any of these terms are helpful in getting an idea across, I think they serve a purpose. The "paperless office" is another example. Often these terms are good for a short time, but they're almost always not literally true.

In the [Diebold Group's] Automated Office Program, we have a lot of big companies experimenting with and using office automation. And the principal experience I've noted among them is that if you're going to start doing office automation, do it for the professional and the middle manager. That's worth all the pain. And then move back into the clerical use. But to start with the clerical use, as if that's an easy approach, is completely wrong and a waste of time and resources. It's an enormous headache for a potentially small yield.

PROGRAMMER PRODUCTIVITY

We've spoken of white-collar productivity as it relates to office automation. What about productivity within the MIS department itself? Where does the opportunity lie for real gains in programmer produc-

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IN DEPTH



CW Photo by C. Marengi

tivity — is it in structured methodologies?

Things like structured methodologies have a value, but you can't overestimate their value. They are a fine-tuning or improvement of the old way.

Or you might go to a language that replaces Cobol and is 20% or 30% more effective — that's great, but that does not solve the productivity problem in terms of all the work you want to do. And it doesn't deal with the new kinds of applications.

So those aids are of incre-

mental value. They help you deal with the problem for a longer period of time, perhaps cope with it. But they don't fundamentally solve the problem. The productivity problem will be solved only by making it as easy as possible for the end user to do his own thing for all those kinds of applications where that's valid.

You see that in information centers, you see that in decision support systems, you see that in a lot of the personal computer software — that's the shape of the application work load in the

The productivity problem will be solved only by making it as easy as possible for the end user to do his own thing for all those kinds of applications where that's valid.

years ahead. And those are not the kinds of applications where you spend 12 man-years programming.

That puts into perspective the structured programming of today. You're fine-tuning an engineering approach that may not be characteristic of the bulk of what you want to do.

To what extent do you see

end users taking on the application development work load?

When you think about it, since technology has such an increasing potential to change the way you do things, no professional can afford to leave that entirely to a third party. In a sense, application development is part of his responsibility.

I see the technology making that increasingly feasible.

It's happening today! Every time an executive gets on a system and pulls off data, he's doing something that, some years ago, had to be put in as a request, go through a bureaucracy, be programmed, be debugged, be put on a system, be run off ... That has all been eliminated.

The information center, the languages for personal computers — these make it possible to do things that would have taken months of programming under old schemes.

So I see the shift of certain kinds of responsibilities to



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IN DEPTH

end users as inevitable.

PUBLIC POLICY

As the opening witness at the first congressional hearing on automation in 1955, you decried the fact that the effects of automation — sociological, psychological, economic and so forth — were still not known. At that time, there was a general climate of mounting fear and mistrust about technology.

How well are its effects understood today? Does automation have a better public image?

I think one of the unfortunate things that's starting to happen is a resurgence of the sort of fear about technology and technological unemployment that was common in the late '50s and early '60s.

The fear is even more pronounced in Europe, where there's an immense and very organized concern over the human effects of office automation and robots. Those are the two focal points. The scare comes on the back of a recession or a depression or whatever you call the economic problems of both Europe and America. And the irony is, we have these economic problems *not* because of too much automation — it's just the reverse!

We see almost a dead replay of the last part of the '50s and the early part of the '60s — you get all the same arguments struggled out. But if there's one thing we learned in the period from then to now, it's that all the new jobs that were created were a result of the growth of the computer industry and everything related to it.

Then, of course, there's the whole human characteristic of robots — it's so easy to make them look like people, and it's so easy to see them stealing jobs. You do have certain situations where people will be replaced by robots — in particular, in certain kinds of factory production. The other side of that coin is that if the production facilities don't use robots, they aren't going to survive! The jobs aren't going to be there either way.

It's wrong to focus on that displacement. If you take the number of new jobs created by automation — in the decade of the '70s something like 20 million in the U.S. alone, by one estimate — and compare that with the im-

mense increase in the work force, including several million legal immigrations, then the unemployment begins to fall into perspective.

When the economy gets

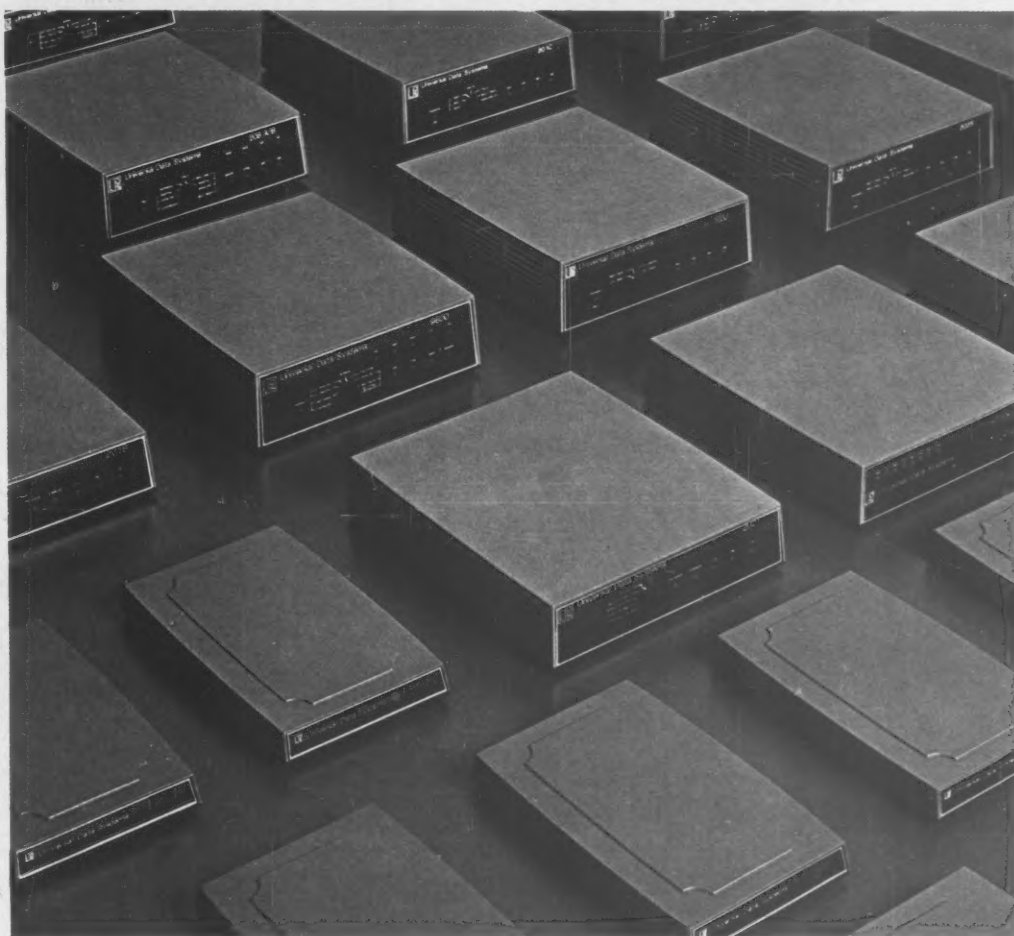
healthier, you're going to find that a lot of this worry fades. And if we're going to have a healthy economy again, it has to be through the aggressive application of

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IN DEPTH

in America are very bad for retraining people and for going from dying industries into sunrise industries. The Europeans and the Japanese, for totally different sets of

reasons, have much better mechanisms for moving people from old industries into new ones. We have never had a good system for that.

In this country, whenever

an industry declines, the worker has always borne the brunt of it much more than the society. And in the end, the society bears a terrible burden because, when you

throw a lot of people out of work, you get immense political pressure. And the pressure goes toward the obvious thing, which is to prop up the dying industry! But

when you put a lot of resources into propping up dying industries, the problem gets progressively worse every year, and you end up with an economy that is terribly weakened.

I worry a lot about the employment question and developments of the future. But what we need to do is focus very hard on how you let people move into new jobs. That's one of our big public policy problems.

There's been a wave of emphasis in the last couple of years on the need to reindustrialize America. Now, for the first time, we have at least one very good economist raising the question: Can we afford to reindustrialize? Do we still have the resources to reindustrialize? My guess is we still do, but it's horrifying that serious people are starting to raise the question. That shows just how late it's getting.

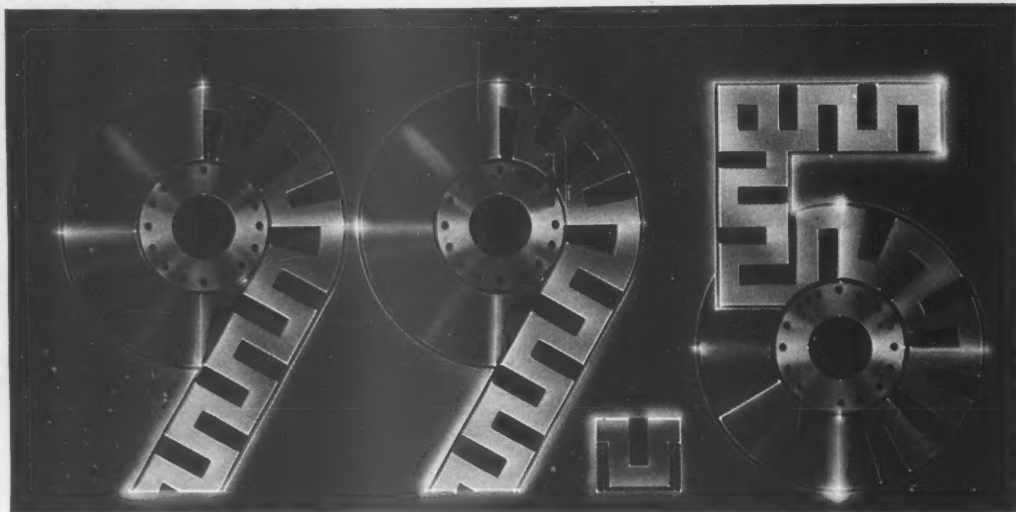
Where should the guidance for public policy in this area come from?

There obviously has to be public-sector leadership. But as soon as you start focusing on any idea of industrial policy in terms of public-sector leadership, you raise the specter of government control.

Our difficulty is that we're so strongly opposed to central, national planning that we fight anything that looks like it might be a state direction or state control. And it's a good instinct to fight that. In the past, we've been very successful without central planning, and I'm all for doing without it. I believe very strongly in free enterprise, and I think that most of the societies that have gone to central planning find that free enterprise is best.

We do need coordination in some form, but which route we should take isn't clear at all, even among the best thinkers in this area. The French have a very highly developed system of central planning, which is not entirely successful. The Japanese have a different arrangement that makes much more use of market competition, but with central guidance through Miti [the Ministry of International Trade and Industry]. We ought to be able to devise our own route to doing this.

When you focus on Japanese productivity, it's really a function of dollars per



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IN DEPTH

worker. We can have the same productivity with a higher level of investment, but we're not putting in the investment. It's absolutely a very serious problem.

But we need to devise our own method for solving it. One of the big mistakes at the moment is that in this country people are relying too much on the Japanese approach and saying, "Let's do what Japan does." But the one thing you can be sure of in devising any strategy, whether it's for a company or a country, the worst thing you can do is look at a model and try to adapt it. Playing "follow the leader" is not going to work. We have to design our own solutions.

A number of public policy questions concerning computers and communications have been debated in the courts, particularly in the infamous lawsuits against IBM and AT&T. Is this any way to address public policy questions?

It's crazy to have a country's computer and communications policies determined by court cases. That's simply not the way to do it! It may come out OK, and I hope it does. But that's not what the court system is about at all.

As for communications policy, I think Judge [Harold] Greene's decision [in the U.S. vs. AT&T antitrust case] is a pretty good one, considering all the factors. But it's insane that we have, on the one hand, a communications agency, the FCC, and the Congress on the other hand, and neither one is able to formulate communications policy. It ends up coming out of a court system designed for a totally different purpose.

Do you think anyone will ever run for office with the mandate of technological leadership?

Well, Francois Mitterand made a strong statement on that subject at the economic summit at Versailles last June. He said that the future of France is going to be determined by leadership in information technology and in biology. He more or less has made that the centerpiece for his administration.

Certainly there's more realization coming up of the need to lead and to do some drastic new things in terms of innovation and technology. And that's one of our strengths as a country — we're good at innovation. All we need is a bit of focusing on the future rather than trying to prop up the past. And the political pressure tends always to be on propping up the past.

LOOKING BACK AND AHEAD

Do you think of yourself as a futurist?

I don't think of myself as a futurist, but I'm not going to fight with people

who drop me into that category. In any profession, you have to think about change that's going on and make the right decisions now in view of discernible future change. And in making policy decisions that affect the years ahead, you need always to think about what that future environment will be.

I think that in a sense, everybody ought to be a futurist. Certainly in this field, it's foolish not to be. You have to look at the incredible rate of

change in the computer industry, at how the economics change, at how the capabilities of systems change, at the organizational problems that stand in the way of getting systems in place and people trained on them. That's where the mistakes come. People tend always to look at currently used equipment. They express the organizational implications in terms of today and not what will be available and at what cost tomorrow. In that sense, anyone in this field had

better be a futurist.

What do you think of, looking back, as your greatest achievements?

I always think of the reverse, all the things to do that I haven't done!

In terms of achievement, probably the main thing I've tried to do has been to focus on the meaning of technology and the main elements necessary to achieve its benefits for this society. And a lot of that has

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IN DEPTH

been focusing on the managerial process, for both public- and private-sector enterprises.

Over the past 25 years, I've spent an awful lot of time and effort on senior management issues, and how technology can be used to fulfill the mission of the enterprise. And that work is now beginning to come to fruition, with really wide acceptance among top management throughout the world. And I've gained very easy access and regular involvement with

the leaders of the main enterprises, both public and private, here and in Western Europe and, to a lesser extent, in Japan.

It has gotten to a point where there's enough development of the technology that you can achieve really different ways of delivering services and products and filling market needs. That's something I've spent years on. And I think our moment in this area is arriving. I think we have a very good understanding of enter-

prise management and how technology can create totally new kinds of enterprises.

I've been much less interested in the very routine use of computers and a lot of the technical side, because you could spend your whole life on that. So I think that so far, playing some role in getting enterprise management to understand what's happening and to build some of that bridge between computer management and enterprise manage-

ment — that's probably the main achievement.

If most of your work lies ahead, what does this future work include?

I see much more work, for example, on this question of what the determinants of competition are. I really see much more happening on the questions of how very large-scale enterprises will be able to compete in a totally different way as a result of using information technology. I think that kind of change is the most fascinating and exciting one.

And I'm getting very interested in the international issues we talked about, the industrial policy issues, and I will be spending a lot of time on that. When I think of the reasons why we in this country have been leaders in the whole field, principally it's because we've been very good at innovation. But that leadership is being challenged materially by the Japanese. And they deserve everything they've gotten!

There are fundamental problems for our society. I think that putting more brains and effort into figuring out how the U.S. can maintain leadership is the only conceivable future for us.

And I will certainly be writing things — I have six major book ideas. Some of them are real books, and others are designed for other media. Considering the 30-year gap since my original book *Automation*, no one can accuse me of rushing into print!

My own measure of myself will come when I'm very old. Will I feel I've had any impact for good in the times I've lived in? I have always wanted to work through institutions, and that's what I've done. One tends to then have a multiplier effect on getting things accomplished.

The public frames of reference in which everything operates are a crucial part of what happens during any period of time. I think we're in a period where technology and its associated problems have outpaced the ability of the institutions to handle many of them. Many institutions are structured in a way that was appropriate to a much simpler society.

I think similarly you want to be sure that technology is not abused. That problem is very important to address — the kind of constraints that society needs to put on technology. But it's a big problem, balancing the constraints with making sure that you don't kill the child. You want innovation, but at the same time you don't want to make inroads on people's privacy.

Our big task is trying to maintain a democracy and have maximum freedom for people, but keep a society that can be governed and where things can get done. I think those are the crucial problems of the day.

About the Interviewer

Catherine Marengi is Computer-world's senior editor, features.

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'Coast-to-Coast' System Bows ATM Networks Moving Nationwide

By Bruce Hoard
CW Staff

More than 300 networks of automated teller machines (ATM) currently exist locally, regionally and nationwide in the U.S. — "and that's about 295 too many," according to Thomas M. Bass, president of The Exchange in Bellevue, Wash.

Bass, who has been called "the Che

Guevara of the nation's ATM business," recently joined forces with Automatic Data Processing, Inc. (ADP), the Clifton, N.J.-based DP services company, to form what he calls the first national coast-to-coast ATM system. Presently, it has 350 ATMs operational in 14 states including Washington, Arizona and Florida.

He said debit card systems like his are

doubling in volume each year while traditional credit card systems such as Visa and Mastercard are being ripped off for astronomical sums. "Visa and Mastercard together are losing in excess of \$1 billion a year in fraud," he declared.

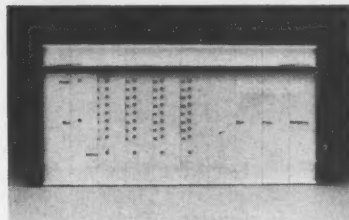
The Exchange is virtually fraud-free because the status of each card is checked during each transaction, he maintained. In the case of lost and stolen cards, it means once they are inserted into the ATM, they are not returned.

In a typical transaction, the customer enters a personal identification number and indicates what he wants to do. The ATM then asks whether the transaction will be done with a checking or savings account. Having indicated that, he enters the dollar amount, which is displayed for approval.

The customer then affirms the amount and the transaction is transmitted to the nearest of two Exchange computerized "switches," located in either Seattle or Clifton. At that point, the security check is made and the transaction is passed on to the bank against which it is being made. The bank responds via the Exchange switch and the ATM completes the operation. Total time — about two seconds, according to Bass.

The Exchange/ADP network uses Tandem Computers, Inc. CPUs, as does Cirrus
(Continued on Page 63)

Coaxial Mux Family Said to Tie Up to 32 3270s to Single Cable



Astrocom Squeezeplexer

PAUL, Minn. — Astrocom Corp. has unveiled a line of coaxial multiplexers that reportedly permit connection of up to 32 IBM 3270 terminals and/or printers to a single coaxial cable.

The Squeezeplexer system links 3270 devices to a single 3274 controller, com-

bining signals for transmission over a single coaxial cable for distances up to 4,000 feet from the controller and redistributes the signals to the connected terminals, the vendor said.

A 32-port multiplexer can be attached over a single coaxial cable to a 32-port demultiplexer or can be multidropped to various combinations of eight-port, 16-port and 24-port demultiplexers. This provides the advantage of using one 32-port multiplexer to service smaller clusters of terminals located on different floors of a building, the vendor said.

The rack-mounted units are priced as follows: 32 ports, \$4,100; 24 ports, \$3,491; 16 ports, \$2,883; and eight ports, \$2,275. Stand-alone, eight-port Squeezeplexers cost \$1,450 each, Astrocom said from 120 W. Plato Blvd., St. Paul, Minn. 55107.

As Stand-Alone or Plug-In Unit

Amdahl Unveils Data Modem

MARINA DEL REY, Calif. — Amdahl Corp. has introduced a limited-distance, synchronous data modem available as a stand-alone unit with cabinet or as a plug-in model for rack mounting.

The Amdahl Model 982 Data Set can be used in point-to-point applications using telephone company facilities, as part of an in-house system with private lines or in network-extension applications. It is said to operate transparently in full- or half-

duplex modes.

The unit includes built-in automatic equalization that reportedly adjusts input sensitivity and eliminates the need for specialized test equipment or any adjustments during installation. It also compensates for line variations during everyday operations, a vendor spokesman said.

Three models are available offering four switch-selectable data rates ranging from 1,200 to 64K bit/sec depending on the model ordered. Prices start at \$495 for the switch-selectable, stand-alone model that offers transmission speeds of 1,200, 2,400, 4,800 and 9,600 bit/sec.

Additional information on the three devices is available from Amdahl, 2500 Walnut Ave., Marina Del Rey, Calif. 90291.

ITT Offers Data Modem

NEW YORK — ITT is offering a high-speed data modem that operates at 48K-, 56K- or 64K bit/sec.

The Model 3082 was designed for wide-ranging applications in data communications, including transmission of high-speed data on leased lines, transmission of multiplex aggregate bit streams on public data networks and extension of pulse-code modulation channels at 64K bit/sec over analog facilities.

It is also applicable in common channel signaling systems in both telephony and public data networks. In addition, it can be used in extended single-channel/carrier satellite earth stations.

Complying with CCITT recommendation V.36 for synchronous data transmission over 60- to 80 kHz group band channels, the 3082 also operates over balanced two-wire lines.

The modem costs between \$7,000 and \$9,000, depending on speed and configuration. ITT said from Suite 8927, 1 World Trade Center, New York, N.Y. 10048.

Tektronix Cuts Price On Graphics Unit

BEAVERTON, Ore. — Tektronix, Inc. has reduced the price of its Model 4112 graphics CRT terminal from \$9,600 to \$5,500.

The monochrome terminal was designed for scientific and technical data analysis, as well as computer-aided design and manufacturing. It features a 640- by 480-point matrix, with an addressable point matrix of 4,096 by 4,096.

Local zoom and pan lets the user scan the internal display space and magnify any selected portion up to full 15-in. screen size for detailed study or manipulation.

Tektronix can be reached through P.O. Box 500, Beaverton, Ore. 97077.

Beehive Unveils CRT Terminal

SALT LAKE CITY, Utah — An interactive CRT terminal featuring a tilt-and-swivel 14-in. screen and detachable keyboard is available from Beehive International.

The ATL-008 uses a 16-bit Motorola, Inc. MC68008 microprocessor, and the standard unit comes with 32K bytes of random-access memory (RAM), expandable to 128K bytes, and 512 bytes of non-volatile RAM (expandable to 2,048 bytes). In addition to eight soft function keys, there are 16 programmed function keys and eight user-defined function keys, the vendor said.

The CRT terminal also features an advanced editing capability that includes fixed- and variable-tab stops, programmable editing extents and a wide variety of erase commands.

The ATL-008 costs \$1,395 from Beehive


at 4910 Amelia Earhart Drive, Box 25668, Salt Lake City, Utah 84125.

Mux Transmits Signals Over Single T1 Facility

CHERRY HILL, N.J. — Datatel, Inc. has introduced a multiplexer that is said to combine data and voice signals for transmission over a single T1 carrier facility.

The DCP9100 T1 Data Mux accommodates data rates of 300K to 448K bit/sec and features solid-state design. It is microprocessor controlled, allowing system configurations to be downline-loaded from the central site. It was designed for rack mounting in a standard 19-in. cabinet, a vendor spokesman said.

The multiplexer is available for \$3,850 from Datatel, 1008 Astoria Blvd., Cherry Hill, N.J. 08034.



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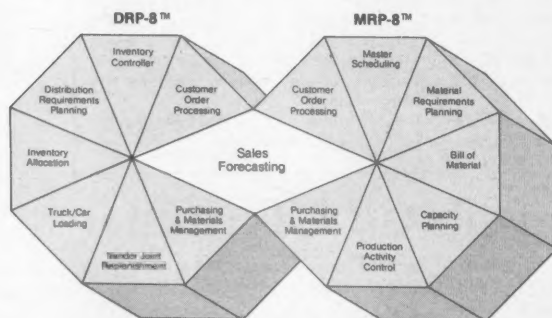
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ATM Nets Consolidating, Moving Nationwide

(Continued from Page 61)
System, Inc., another nationwide system that expects to be up and running with over 800 ATMs in 12 states by early 1983. Cirrus President Bruce Burchfield said the Tandem machines are "ideal for telecommunications switches." He also reported that software development for Cirrus took about a year.

Bass said Diebold, Inc. is the dominant ATM supplier, with nearly 50% of the market, followed by IBM and Docutel Corp. with about equal shares.

Some bankers feel the unrestricted growth of national ATM networks poses a serious threat to the survival of the banking industry as the dominant provider of financial services. The Regional Interchange Association (RIA) is one organization that is working to unify competing networks. It is currently composed of 15 networks and growing, Bass said.

He predicted a "huge consolidation" among the 300 networks that will see many of them join forces with The Exchange, Cirrus, RIA or some other network that may not yet even exist. "In five years, there will probably be five dominant networks,"

Switch Unit Announced

SANTA ANA, Calif. — Western Telematic, Inc. has announced a code-activated RS-232 asynchronous terminal switching device.

The Model CAS-161 can switch between any one of 16 ports by using a 2-char., user-selectable Ascii code sequence. It is field-expandable to 32, 48 or 64 ports.

A basic 16-port unit costs \$800. Each 16-port add-on module costs \$550, the vendor said from 2435 S. Anne St., Santa Ana, Calif. 92704.

Bass said.

Nancy Grant, managing editor of *Bank Network News*, said the biggest advantage of The Exchange is that it offers a complete ATM support package as an option, including ATM attachment, doing all the line transmission, marketing support and more.

No Exclusive Area

She added that there is a basic philosophical difference

that distinguishes The Exchange from Cirrus. "They're neutral," she said of The Exchange. "You can have five people sign up from the same area and they can do as they wish. There's no exclusive territory."

On the other hand, Cirrus allows member institutions to sign up for a particular area and no competitor from that area is allowed to join without permission from the

first institution, she noted.

But there are some confusing legal impediments to ATM networks. Theresa Einhorn, a partner in the Washington, D.C., law firm of Zimmer and Einhorn, explained how state and federal regulations are brought into play.

"The general rule is that state banks are regulated by state laws," she said. "However, there are some federal

laws that apply." She added that national banks are usually governed by federal law, except in some states where a mix of federal and state laws prevail.

The basic question revolves around branching. The federal McFadden Act prohibits branching across state lines. However, Einhorn said there are "many ways" national banks can use ATMs across state lines.

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Lower entry level — The new V-8535-II is a 32-bit processor with cycle time of 112 nanoseconds and a memory of one megabyte. It employs NCR's powerful Virtual Resource Executive (VRX) operating software.

Expanded memory — For most of the enhanced systems in the new series, potential memory is increased from 50 to 100 percent. Maximum memory now ranges from one megabyte for the V-8535-II to eight megabytes for the dyadic V-8595-II.

New dyadic systems — The NCR V-8500-II Series now includes three dyadic systems. Systems that combine symmetrical, tightly-coupled dual processors in a single cabinet. Both processors share all system resources equally with continuous dynamic load leveling.

Migration Path Engineering — As always, NCR provides easy transition from one system to the next without difficult conversion of software.

For more information, just call toll free (800) 543-8130 (in Ohio, 800-762-6517). Or write to EDP Systems, NCR Corporation, Box 606, Dayton, Ohio 45401.

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Fits 3270 Series Peripherals

Coaxial Mux Series Announced

HYANNIS, Mass. — Fibronics has introduced a multiplexer said to employ a single coaxial cable between two multiplexer units. It was designed for IBM 3270 series peripherals.

The FM-1674 CX series is an available option to the Fibronics FM-1670 fiber-optic series system. The coaxial multiplexer series is said to work on the same principles

as the fiber-optic series. The output transceiver module can be selected for coaxial interface or a fiber-optic interface.

The FM-1674 CX System can be installed using one existing coaxial cable to expand any 3270 system up to 32 ports, a vendor spokesman said.

Prices for the multiplexer start at \$4,500. More informa-

tion is available from Fibronics, 218 W. Main St., Hyannis, Mass. 02601.

Modem Targets Apple II

SAN JOSE, Calif. — SSM Microcomputer Products, Inc. has announced a 110/330 bit/sec full-duplex modem for the Apple Computer, Inc. Apple II.

The SSM Apple Modem-

PARAMUS, N.J. — Computer Transceiver Systems, Inc. (CTS) has introduced a

card features half-duplex and full-duplex and autotransfer/autodial.

SSM Apple Modemcard costs \$299 from SSM at 2190 Paragon Drive, San Jose, Calif. 95131.

1,200 bit/sec, 120 char./sec portable printing terminal. The Execuport 4120 is multi-processor-based and is equipped with two character fonts.

Also introduced is the Execuport 4120 BSR with buffering and editing capabilities. It can prepare edited messages off-line for later on-line transmission at up to 120 char./sec. It has six commands not available on the 4120 and a 16-element columnar print head for high-resolution printing, a vendor spokesman said.

The 4120 is available for \$3,295. The 4120 BSR with 11K bytes of memory costs \$3,695; with 43K bytes of memory, \$3,995.

Also introduced by the company is the Execuport 400 series of portable impact printers. The three models of the 400 series feature a seven-dot-matrix-impact print head. The printers produce high-quality printing on plain paper and provide multicopy capability.

The Models 420, 430 and 440 range in price from \$795 to \$1,195 and are available from CTS, P.O. Box 15, E. 66 Midland Ave., Paramus, N.J. 07652.

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Controller Ties HP 3000 To 16 Units

PALO ALTO, Calif. — Hewlett-Packard Co. has introduced a controller that reportedly can connect up to 16 RS-232-type devices to an HP 3000 computer system using HP's DSN/Data Link.

The HP 2333A cluster controller can be configured to accept from four to 16 peripheral devices for communications to one or two HP 3000s. When two computers are connected, any device in the cluster can address or be addressed by either computer. The two lines also can be used for redundant connections to a single computer to prevent line loss, a spokesman said.

Speed of transmission from the cluster controller to the system is up to 19,300 bit/sec. Speed of transmission from the controller to peripherals is up to 9,600 bit/sec.

The HP 2333A cluster controller, in a four-port configuration, with single HP 3000 access, is priced at \$2,820. The 16-port version is \$5,280. Dual HP 3000 access is \$550 additional. More information is available from Hewlett-Packard, Inquiries Manager, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Cuts Maintenance, Product Prices

Stratus Unveils Two High-End Systems

NATICK, Mass. — Stratus Computer, Inc. has revamped its line of fault-tolerant minicomputers with the introduction of two new high-end systems featuring 8M bytes of memory priced at \$5,000 per 1M byte.

Stratus/32 Continuous Processing Sys-

tem P107 reportedly boasts 8M bytes of memory, arranged in two 4M-byte portions for fault tolerance, a fault-tolerant processor, communications controllers, Winchester disk controllers, power supplies, a 100 in./sec nine-track tape drive, cabinet and a remote maintenance mo-

dem. This product is priced at \$135,000. The first P107 was shipped two weeks ago, the vendor said.

The Model P127 is configured just like the P107 except that the fault-tolerant Winchester disk controllers are replaced by controllers that support removable disk drives. This system costs \$140,000, and the first shipment is scheduled for this month, according to the vendor.

Both models are expandable to 16M bytes of memory, 64 asynchronous ports or 32 synchronous ports, a Stratus spokesman said. Each model can also be expanded to include up to 32 fault-tolerant processing modules.

All Stratus products come with the company's proprietary Virtual Operating System software, which is comparable to the Honeywell, Inc./MIT Multics operating system, the vendor stated.

In a simultaneous announcement, Stratus said it will reduce maintenance charges on some of its products and hold a 1981 price ceiling on its remaining offerings. The annual maintenance fees for typical Stratus configurations will reportedly drop by approximately 6.5%.

The 1983 price cuts will go into effect Jan. 1. Further details are available from Stratus at 17-19 Strathmore Road, Natick, Mass. 01760.

Remote Job Entry System Out For CDC's Cyber 170 Systems

MINNEAPOLIS — A remote job entry system designed to enhance productivity and reduce the cost of distributed data processing operations has been unveiled here by Control Data Corp.

The Cyber Remote Station-55 (CRS-55) operates with up to 16 editing stations and can be linked to CDC's Cyber 170 computer systems, including those in the company's Cybernet Services data processing network.

The 16-bit processor boasts 512K bytes of main memory that is expandable to 1M byte and a disk storage capacity of 96- to

384M bytes, according to the vendor. The CRS-55 offers users two levels of computing: application development and pre- and postprocessing that can be completed on site, while data processing tasks can be sent to the host Cyber 170.

Software for the CRS-55 includes the Advanced Operating System and a communications protocol. Optional software includes Fortran V, Basic and California Computer Products, Inc.'s Plotter Driver. Peripheral equipment options include printers, card readers, magnetic tape drives and display consoles.

The purchase price for a base CRS-55 configuration is \$92,550. Further details can be obtained from CDC through Box O, Minneapolis, Minn. 55440.

Said to Feature 32,000 Colors

Graphics Terminal Introduced

ITHACA, N.Y. — A desktop color graphics terminal said to be capable of displaying and manipulating 16 windows

has been unveiled here by Ithaca Intersystems, Inc.

The Graphos terminal features a resolution of 640 pixels by 480 pixels; individual scroll, pan and zoom and graphics overlay for each of the 16 windows; segment retention without retransmission from host; two-dimensional segment transformations; high-level primitives; shading, cross-hatching and texture features; device-independent graphics subsystem; multiple fonts; and over 32,000 colors.

Three I/O modules can be incorporated into Graphos to provide for future expansion, allowing a variety of interfaces such as RS-232, RS-422, IBM's High-Level Data Link Control, according to the vendor.

Graphos costs under \$8,000 from 1650 Hanshaw Road, Ithaca, N.Y. 14850.

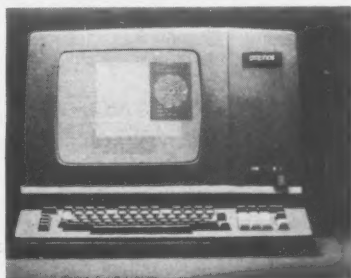
Mesa Announces Tape System

GAITHERSBURG, Md. — Mesa Technology Corp. (MTC) has announced a multibus-compatible group-coded recording (GCR) digital tape system that reportedly combines 125 in./sec and GCR 6250 bit/in. density tape storage in the multibus environment.

The MTC Model 4000 provides read/write capability at 6250 bit/in., 1600 bit/in. and 800 bit/in. according to a spokesman for the vendor. The device also supplies interchangeability with traditional mainframe installations, reportedly at all commonly used data densities.

The Model 4000 consists of a single-board controller, software driver, Telex Corp. tridensity Model 6250 formatted tape transport, equipment rack, cables and documentation.

The device costs \$33,950, the vendor said from 16021 Industrial Drive, Gaithersburg, Md. 20877.



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Includes Priority Plus Products

RCC to Market Line With Series/1

ROSLYN, N.Y. — Remote Computing Corp. (RCC) has announced that it will market a line of Priority Plus Corp. software products bundled into a packaged IBM Series/1 configuration. The software is also available separately.

The packages offered include general ledger, construction loan control, mortgage loan origination and tracking, accounts payable, fixed-asset accounting, personnel accounting and purchase and supply accounting.

A spokesman said routine accounting functions can be handled on the IBM Series/1 with the RCC mainframe available for planning and forecasting, portfolio pricing, in-

vestment strategies, merger/acquisition and peer group analyses.

Service agreements are also available to link the packages to RCC's Burroughs Corp. mainframe.

The software/hardware configurations are priced from \$70,000. Individual software packages cost from \$4,000 to \$20,000 from RCC at 1044 Northern Blvd., Roslyn, N.Y. 11576.

Duty Cycle Band Printer Offered

MALDEN, Mass. — Data Printer Corp. has announced the BT-1500 duty cycle band printer.

The unit was designed to operate at the high cycles typically found in shops using high-speed printers. The printer is aimed at medium-size and large shops needing a high-volume output device for DP centers, remote

batch terminal applications or large distributed processing modules, the vendor said.

The BT-1500 can print at 1,500 line/min using a 48-char. set. The unit can print at 1,200 line/min using a 64-char. set. The BT-1500 costs \$20,000, the vendor said from 99 Middlesex St., Malden, Mass. 02148.

Bar Code Reader Subs for Keyboard

PALO ALTO, Calif. — Hewlett-Packard Co. has introduced a bar code reader as an alternative to keyboard data entry.

The HP 92911A plugs in and receives its power supply from the terminal to which it is connected. It is entirely transparent to the applications software, the vendor said. It is designed to function with the HP 2622A, HP 2623A, HP 2624B and HP 2626A terminals and with the HP 125 office computer.

The HP 92911A is priced at \$650, HP said from 3000 Hanover St., Palo Alto, Calif. 94304.

Image Processor Fits DEC Unibus

BURLINGTON, Mass. — A real-time image-digitizing system for machine vision applications on Digital Equipment Corp. Unibus-based equipment has been introduced by Octek, Inc.

Called the Model 2210 Image Analysis Processor, the system includes a direct-memory access controller that links to the host computer for time-critical analyses, dual-camera input and multiple red-green-blue or black-and-white displays. The Model 2210 reportedly handles standard camera input with detail to a thousandth of an inch to produce an enhanced image from 16 shades of grey, the vendor said.

Software for the system features a self-teaching program, a library of Fortran, a library of Fortran subroutines to control all hardware functions and documentation. An optional Machine Vision Module is available for robot and machine control for a variety of industrial and manufacturing uses, according to the vendor.

Prices for Octek's Image Analysis Processor begin at \$7,600, the vendor said from 7 Corporate Place, Burlington, Mass. 01803.

Board Made For Graphics

BEDFORD, Mass. — Ikier Technology, Inc. has recently announced a Multibus-compatible reference table board.

Aimed at the high-resolution graphics system builder with imaging or vector problems, the Multiplane Controller (MPC) board is intended for use with multiple high-resolution graphics controller boards. The board can reportedly be used to obtain eight-image planes with multiple overlays.

Software support for the board includes a Bell Laboratories' Unix-compatible C driver and a standard Association of Computing Machinery-backed Siggraph Core package.

A single MPC board costs \$1,900 for the maximum configuration. Further details are available from the vendor at 7 Oak Park, Bedford, Mass. 01730.



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Interactive System Generator Out for Decsystem-10, 20

BURLINGTON, Mass. — Interactive Systems, Inc. has announced an Interactive System Generator (ISG) for users of Digital Equipment Corp.'s Decsystem-10 and Decsys-

'CAT-1' Features 3-D Modeling, Fits Terak 8510

ATLANTA — A computer-aided design (CAD) system featuring geometric modeling and data base structure has been announced by Catronix Corp.

The CAT-1 is said to use an algorithm for three-dimensional modeling, which allows it to reside on a minicomputer. It also uses a unified data base structure for communications through interfaces to other CAD and computer-aided manufacturing systems.

The CAT-1 is available on a Terak Corp. 8510 computer. The entire system costs about \$50,000, the firm said from Suite 100, 151 Sixth St. N.W., Atlanta, Ga. 30313.

Printer Buffer Relieves Host

DALLAS — Applied Creative Technology, Inc. has announced a printer buffer called the Printer Optimizer.

The unit is located between the host processor and a printer (or modem), and relieves the host processor from waiting for the printer to finish printing, the vendor said.

The unit costs \$495 and comes with between 65K- and 256K bytes of memory to store data from the host processor. An optional plug-in serial RS-232 card for converting parallel or serial to serial data costs \$125.

Applied Creative Technology is located at Suite 717, 2723 Ave. E., Arlington, Texas, 76011.

IMC Offers Design Guide

BETHESDA, Md. — The International Micrographic Congress (IMC) is distributing a new book called *Computer-Aided Design and Manufacture*.

Written by Dr. C.B. Besant of the department of mechanical engineering at the Imperial College of Science and Technology, University of London, the survey is primarily aimed at the nonspecialist.

The text introduces basic computer techniques with a summary of hardware, software and information systems handling techniques. The book guides readers through the successive stages of engineering designs.

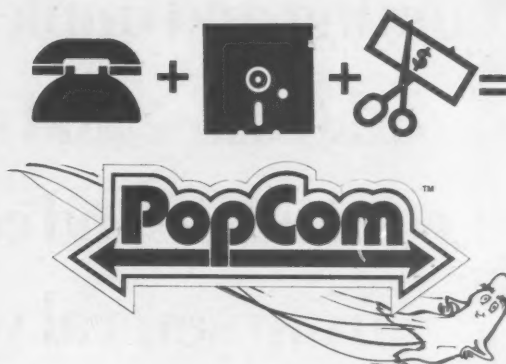
Published by John Wiley and Sons in 1980, the 170-page, soft-cover book costs \$32 by surface mail and \$36 by airmail from IMC, Publications Sales, P.O. Box 34404, Bethesda, Md. 20817.

tem-20 mainframe computers.

The package was designed to automatically generate a Cobol source program through a menu approach, the vendor said. Inquiry and update programs can be generated that utilize Isam or random, sequential or data base file access, the vendor said.

User-defined routines reportedly can be stored with the system's library facility. The product also interfaces with the company's forms manager Scope and is capable of generating different versions of Cobol source code.

ISG is priced at \$5,000, the vendor said from 131 Middlesex Tnpk., Burlington, Mass. 01803.



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Televideo Adds Four Micros To Business Line

SUNNYVALE, Calif. — Televideo Systems, Inc. has added two 8-bit and two 16-bit microcomputers to its line of small business systems.

The 16-bit processors, the TS1603 and TS1600, are based on Intel Corp. 8088 microprocessors, and both units reportedly support Digital Research, Inc.'s CP/M operating system.

The TS1603 features two 500K-byte floppy disk drives. The units can also be upgraded to accommodate business-quality graphics with a resolution of 640 pixels by 240 pixels. The TS1603 can be used as a stand-alone processor or can be integrated into a data-sharing network of up to 16 processors. The processors can be either 16- or 8-bit machines. The TS1603 costs \$3,495, the vendor said.

The TS1600 is an intelligent workstation that connects to a TS1603 via Televideo's Mmmost network. Like the TS1603, the TS1600 has 128K bytes of random-access memory (RAM) — expandable to 256K bytes. Two serial ports and one RS-232 port are standard. The TS1600 costs \$1,795, the vendor said.

The 8-bit processors, the TS803 and TS800, are based on the Zilog, Inc. Z80A microprocessor. Both systems offer one RS-232 port and one parallel port plus a RS-422 port. Both systems use the CP/M operating system, the vendor said.

The TS803 is a stand-alone system with two 500K-byte floppy disk drives. A business graphics feature is standard, and the unit can accommodate up to 16 multitasking workstations. The TS803 unit comes with 64K bytes of RAM and costs \$2,495, the vendor said.

The TS800 can operate with the TS803 as a satellite station using the Mmmost network. The unit does not require additional memory and is aimed at the small to medium-size user. It costs \$1,495, the vendor said.

All of the systems are based on Televideo's 970 smart terminal, announced at the National Computer Conference last spring. The vendor is located at 1170 Morse Ave., Sunnyvale, Calif. 94086.

Sord Micro Line Debuts In U.S. Under Socius Name



Sord Computer Systems M343



M23 Microcomputer

NEW YORK — Sord Computer Systems, Inc. of Japan introduced its first series of microcomputers to the U.S. here recently under the Socius brand name.

The company's product line includes the Socius M23P, an 8-bit lightweight computer with 128K bytes of memory, two 3½-in. floppy disk drives running under the company's proprietary Pan Information Processing System (Pips) and costs \$2,595. Available options include a Digital Research, Inc. CP/M-compatible operating system and a Socius SLP-160 dot matrix printer, according to the company.

A Zilog, Inc. Z80A-based desktop business computer called the M23 Mark III is also offered and includes 128K bytes of memory and two 5¼-in. floppy disks. The unit also operates under Pips and is priced at \$2,695. Options include the CP/M-compatible operating system, daisywheel and dot matrix printers, color monitor and a word processor, Sord said.

The M23 Mark V includes all of the features of the Mark III, but adds two IBM-compatible 8-in. floppy disk drives for increased storage capacity. It sells for \$3,495.

Both M23 models are immediately available.

Sord's 16-bit entry, the M343, was designed for the office. It includes an Intel Corp. 8086 microprocessor and 256K bytes of memory. The M343 comes in four models and uses either hard or floppy disk storage systems and runs with either the company's Realtime Disk Operating System, or its Realtime Multijob Disk Operating System, according to Sord.

The M343 can run on most available U.S. software and offers optional operating systems including MS-DOS, CP/M-86 and UCSD P-System. This model costs \$6,000 and is awaiting Federal Communications Commission (FCC) approval for distribution.

A home computer called the M5 was also announced by the company. It has a Pips-like program for home finances and has peripheral hookup capabilities. It also awaits FCC approval and is priced at \$247, the vendor said.

More information is available from Sord Computer Systems, Inc., 200 Park Ave., New York, N.Y. 10166.

DG Offers Disk Drive Upgrades

MILFORD, Mass. — Data General Corp. is offering to upgrade its 96M-byte and

190M-byte disk drives to a 277M-byte drive.

The upgrades are available at a 75% savings from the list price of comparable new subsystems, according to the vendor. They reportedly increase recording density from 4040 bit/in. to 6060 bit/in., raising system data transfer rates by 50%.

The price for upgrading the 96M-byte drive is \$17,000; for upgrading the 190M-byte drive it costs \$10,000. Both prices include installation by DG field engineers. Further details are available from the vendor at 50 Maple St., Milford, Mass. 01757.

DEC/CDC Interface Unveiled by Xeta

NASHUA, N.H. — A module that is said to provide an interface between Digital Equipment Corp. LSI-11 series microcomputers and Control Data Corp. peripherals has been announced by Xeta, Inc.

The Xeta Q-Disk is a DEC Q-bus plug-compatible interface that reportedly allows interconnection of a CDC Winches-

ter disk drive. It features error detection/correction, automatic bad track mapping and diagnostic capabilities. It allows expanded disk storage capacity equivalent to two DEC RLO2 or four RLO1 disk drives.

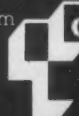
The Q-Disk is priced from \$795. Xeta can be reached at 51 Lake St., Nashua, N.H. 03060.

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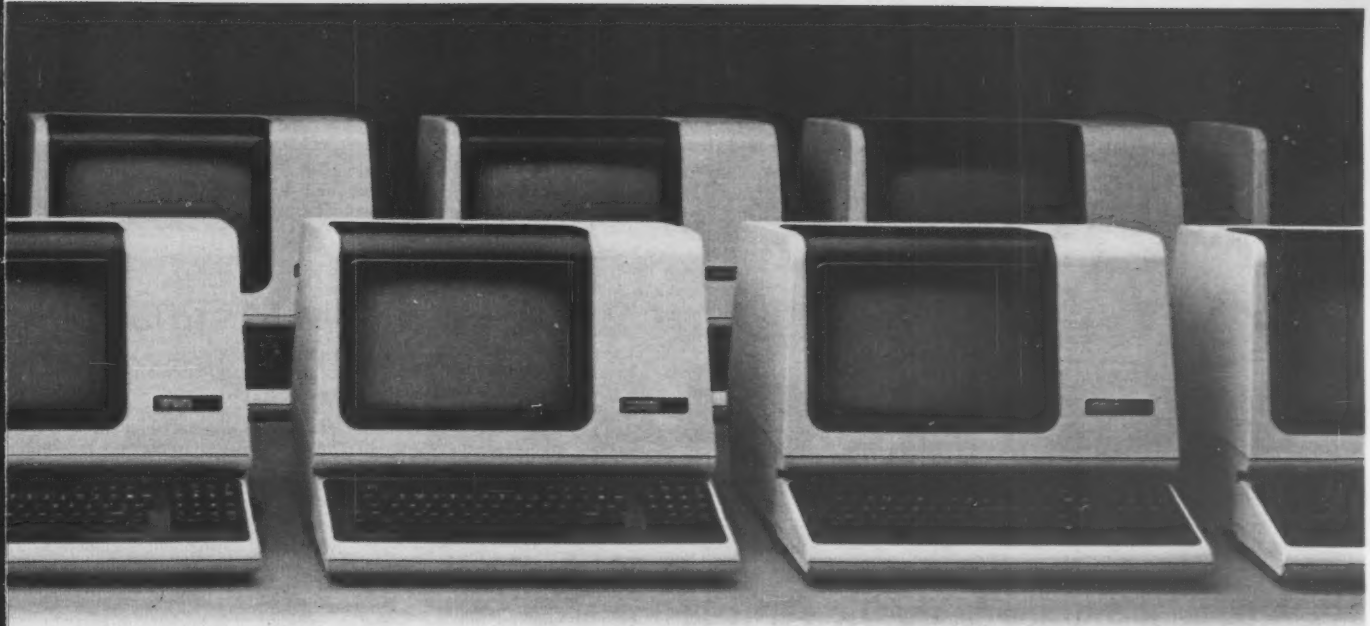
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The VT125 also writes text as well as it draws pictures, so what graphics fail to express, words can.

You can buy the VT125 as a complete terminal package. Or you can buy it as an option for the VT100 you already own.

Either way, it'll work like a charm on most systems supporting ASCII terminals. As will any other terminal in the VT100 family.

This next one, for instance.

The economical VT101.

It can display 80 or 132 columns of data with smooth scroll. You can select double-height and double-width characters. And you can personalize it right from the keyboard . . . so you'll feel comfortable working with it.

But because the VT101 was designed with less option space than the VT100, it costs less.

Thus it's perfect for people who want a terminal as easy to use as a VT100 but not as expensive.

The VT101, we think, fills a very practical niche between too much terminal and not enough.

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The VT131. A new, fully optioned terminal.

You get advanced video features to make an operator's life easier and more productive. The VT131 also comes with a printer port, five full and half duplex protocols and full modem control.

With the VT131 you can select block mode or character operation from the keyboard.

All of these features are designed in a terminal package that, like the VT101, has less option space than the VT100.

Thus the VT131 also represents an affordable choice in terminals.

Then, of course, there's the VT100 itself.

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Hard-Disk Memory System Targeted for IBM Micro

CLEVELAND — Tecmar, Inc. has introduced a new hard-disk memory system for the IBM Personal Computer that reportedly combines both hard and floppy disk technology.

The Tecmar unit is said to feature both the 5M-byte capacity and fast seek-time of the 5¼-in. Winchester, along with the unlimited memory and memory-swapping capabilities of floppy systems.

It measures half the standard drive height and reportedly installs directly into an IBM Personal Computer chassis or an expansion chassis. It uses the same amount of power as a 5¼-in. floppy, the vendor said.

This product costs \$1,795, which

includes the drive, one cartridge, necessary interface cards, software, cabling, mounting hardware, instructions and documentation. Further details can be obtained from Tecmar at 23600 Mercantile Road, Cleveland, Ohio 44122.

IBM Micro Gets PDI464 Board

MARKHAM, Ontario — Pure Data Ltd. has announced that its PDI464 combination board is now available for the IBM Personal Computer.

The board reportedly features six separate functions: expansion memory, two asynchronous serial channels, a real-time clock, a disk emulator and a print spooler. The memory section provides up to 256K bytes of fully socketed expansion memory with parity generation and checking. The two serial channels are compatible with IBM serial channels and each channel reportedly can be selected to reside at one of four addresses to allow for future expansion.

The real-time clock section features quartz-crystal control and lithium battery backup. It features hours, minutes, seconds, day of week, date, month and year, with automatic leap year adjustment, according to the vendor.

The disk-emulation package allows memory to be treated as an ultrafast disk drive. It can be configured as a single- or double-sided drive and can appear as Drive B, C or D, the vendor said.

The 256K-byte version of this product costs \$1,095, and Pure Data can be reached at 950 Denison St., Unit 17, Markham, Ontario, Canada L3R 3K5.

Diagnostics Out for TI Users

DALLAS — Texas Instruments, Inc. has announced a remote diagnostics service for users of its Business System 300 through 800 series and DS990 Systems Models 4 through 36.

On-Line Remote Diagnostics (ORD) performs system monitoring and diagnostics from the Remote System Diagnostic Center (RSDC) in Austin, Texas. The center identifies trends that indicate potential hardware failures by continuously monitoring the system performance.

RSDC also identifies the source of most system failures and dispatches a maintenance specialist.

The ORD service uses the On-Line Diagnostics and Operating System Log, which is a standard part of TI's DX10 and Dnos operating systems. Once a day, the system log is transmitted to the RSDC. RSDC personnel contact the customer when a potential problem is identified.

ORD will be available to service contract customers in January at a cost of 5% of the service contract. TI can be contacted at P.O. Box 202146, Dallas, Texas 75220.

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Intel Enhances NDS-II With Trio of Products

SANTA CLARA, Calif. — A 35M-byte Winchester disk drive, program management software and a flexible intelligent archive utility have been added to Intel Corp.'s multiuser Network Development System II (NDS-II). The drive reportedly doubles the system's storage to 70M bytes.

The enhancements are intended to help ease program management, increase storage and further simplify file access, the vendor said.

The Winchester drive requires no change of work habits for the user because it fits into the original chassis, according to the vendor, and is completely integrated with the hierarchical file system, which permits the user to select named files for processing without references to the

file's physical location.

The program management tool consists of two linked utilities that help programmers in a multiuser environment track version changes, according to the vendor. The utilities are the software version control system and the automatic software generation package.

The intelligent archival capability reportedly allows the user to back up files or portions of files selectively to floppy diskette or hard disk, based on file selection criteria such as author or changes within a specified time period, the vendor said.

The intelligent archiving and program management software will be

provided free to registered NDS-II owners as an update. Future sales of the NDS-II will include the utilities. The second 35M-byte disk will cost \$8,220 and the NDS-II is base-priced at \$39,950, an Intel spokesman said.

Additional information is available from Intel at 3065 Bowers Ave., Santa Clara, Calif. 95051.

Commodore 64, Vic-20 Get Storage Device

SUNNYVALE, Calif. — Exatron has unveiled a stringy floppy mass storage peripheral, compatible with Commodore Business Machines, Inc. Vic-20 and Commodore 64 microcomputers.

ESF-20/64 consists of two units: a

miniature endless-loop tape cartridge and an electronic direct-drive transport mechanism that plugs into the serial bus connector on Commodore systems.

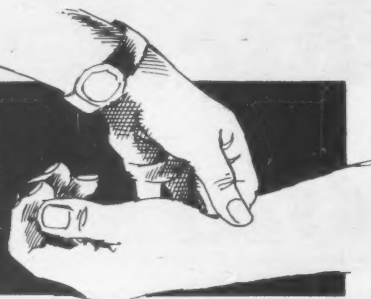
This product can be interfaced without any changes to Commo-

dore's hardware or software, according to the vendor. The tape transport operates at speeds of 5 in./sec and has a memory capacity of up to 64K bytes, the vendor said.

The single-unit price of the ESF-20/64 is \$199.50, the vendor said from 181 Commercial St., Sunnyvale, Calif. 94086.

TAKING THE INDUSTRY PULSE

or how to stay healthy in 1983



Change. It's the heartbeat of the computer industry. But change happens so fast in this business that few can keep up with it, let alone interpret what it means. The "Forecast '83" issue of *Computerworld* will do just that — reporting not only what happened in the computer industry and what may happen, but also what those changes mean to both the industry and end users in the turbulent year ahead.

The entire editorial staff of *Computerworld* is working full time to review the key events of 1982 and how they will affect your business in 1983. Staff writers, senior writers, writer/analysts, senior editors and correspondents — a combined total of more than 175 years' experience in computer journalism — will provide the facts and forecasts that will shape the computer industry next year.

They're looking at underlying trends in the industry; they're checking with the experts and the industry giants; they're reading the studies, the reports, the research. And, to take the true pulse of the industry, they're doing what professional journalists do best — conducting extensive interviews with DP/MIS executives across the country.

This is the issue that puts what's happened in the past year into perspective. You'll get analysis, you'll get trends, you'll get a feel

for the way the industry has responded. Here's what's in store for you:

- You'll learn what the industry giants are doing in various market segments — and what their plans may mean to your business.
- You'll get a close-up look at end-user computing and its impact on DP/MIS departments.
- You'll get a look at the economic underpinnings of the computer industry and how those forces will drive the industry in 1983.

In other words, you'll get all the insight you need to do your strategic planning for the months ahead.

Being on top in this business means being prepared for the changes ahead. *Computerworld's* "Forecast '83," coming on January 3, is what you need to be prepared. And if you sell to computer industry buyers, you'll want your ad where those buyers are — reading "Forecast '83" in the first issue of *Computerworld* in 1983.

Ad deadline is December 10, 1982. Call your *Computerworld* sales representative listed below, or, for more information, call Don Fagan, Vice President-Sales, at (617) 879-0700.



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System Controls Lock, Key Data

NEWPORT, R.I. — Key-1 Computer Systems has unveiled a turnkey microcomputer product for computerized management control of lock and key information.

The Keynote System automatically processes lock installation and removals, issues keys individually or in sets and prints receipts, records and audit trails, according to the vendor. The system can find any key or lock by its marking, its location, manufacturer, type or label.

The system features a built-in automatic data backup procedure, a demonstration disk, security supervisor's manual, a computer user's guide card, computer maintenance kit, disk storage library box, preformatted data disks and supply of printer forms for its printer unit. Prices start at \$6,500.

Key-1 Computer Systems is based at 178 Spring St., Newport, R.I. 02840.

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E-Mail Plan Boasts Lower Communications Costs

The 700 series products range in price from \$5,000 to \$25,000, Compucorp said from 2211 Michigan Blvd., Santa Monica, Calif. 90404.

Following a three-month pilot program in its Office Information Systems (OIS) Center here, TRW has now expanded its electronic mail program corporatewide to

Currently the company is carrying out a pilot study with its sales and marketing force using electronic mail devices. Sales

Software Transforms OC 8820

The 3270-Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) package was designed especially for the vendor's OC 8820 Occupational Computer. It provides an SNA/SDLC environment for the personal com-

The package is described to the host as a Physical Unit Type 2/3. The communications series includes a binary synchronous communications (BSC)-3270 emulator that acts as a 3271 controller with a 3277 terminal, a 3274 controller with a 3278 terminal or a 3275 or 3276 controller.

The software costs approximately \$1,000 from Monroe at The American Road, Morris Plains, N.J. 07950.

Software Package Announced For Ethernet Local-Area Nets

LOS ANGELES — Network Research Corp. has announced Fusion, a software package for Xerox Corp.'s Ethernet local-area networks.

Fusion reportedly supports file transfer,

remote program execution and electronic mail transmission over a 10M bit/sec Ethernet local-area network. The software is compatible with Digital Equipment Corp. VAX-11 or PDP-11 series processors, as well as computer systems that are based on Motorola, Inc. 68000 or Intel Corp. 8086 microprocessors.

Performance of the package varies with the host system and amount of disk storage.

The package can function with Bell Laboratories' Unix and DEC VMS and RSX-11 operating systems, a spokesman for the vendor said.

The software package costs \$500 from Network Research, located at Suite 200, 1964 Westwood Blvd., Los Angeles, Calif. 90025.

'Then-If' Unveiled for Executive

ARLINGTON, Texas — Legist Automation, Inc. has introduced an electronic spreadsheet software package said to run on any Four Phase Systems, Inc. processor that supports the multifunction operating system, Executive.

Then-If is said to be useful for financial modeling, specifically for asking "what-if" questions. It was designed for the user

with a small application that may not justify the expense of a full-time programmer.

Its built-in facilities allow the user to define the job and produce reports. When it is later necessary to change the data, the system recalculates the entire sheet. The package is available for a starting price of \$2,400 from Legist Automation, 1212 Millbrook Drive, Arlington, Texas 76012.

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tems: AOS/VS (our interactive advanced operating system with virtual storage). Or AOS/RT 32 (our lean, deterministic, real-time operating system). Plus a wide variety of industry and international standard communication protocols. As well as our XODIAC™ network management system, SNA, CEO™ (office automation) and data base management software. And an array of commercial and technical languages, productivity tools, and third party software packages.

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TRW Looking to Office Automation Strategy

(Continued from Page 77)
representatives are using hand-held data devices to determine expected productivity gains. In addition, data

phones have been placed on managers' desks to determine if they have a useful role to play in information gathering and dissemination.

Datapro WP Software Report Out

DELRAN, N.J. — A report designed to aid companies seeking to add text processing capabilities to their systems has been introduced by Datapro Research Corp.

The 91-page "All About Word Processing Software" reportedly provides descriptions of word processing software designed for use with mainframes and minicomputers, highlighting 164 products of 101 different vendors. Each of the software

profiles includes the product and vendor name, compatible computer models and processing requirements and purchase and rental pricing.

The packages are cross-indexed by manufacturer to allow users to locate the variety of packages compatible with their installed systems.

"All About Word Processing Software" is priced at \$19 from Datapro Research, 1805 Underwood Blvd., Delran, N.J. 08075.

The OIS center charter states: "The strategy ... is to increase the decision-making ability of the users by enabling them to gain the power of the computer. The objective is to increase the self-sufficiency of the user in the access and manipulation of data, reducing his requirement for programming resources."

Bette King, supervisor of systems support at the OIS Center, said it was too early to quantify productivity gains, but she asserted that expected benefits include a significant increase in the transmission of information, leading to faster turnaround times and the cutting down of long-distance telephone costs.

In addition to electronic mail, the company is experimenting with the

use of personal computers, mostly for applications in program development fields such as software documentation, but also in financial spreadsheet, modeling, planning and budget forecast applications.

Most of the personal computer applications are set up through remote job entry devices with data being transmitted through leased lines between two buildings eight miles apart.

Word processing facilities in the OIS Center consist of a document composition facility (DCF) — a host-based, text-processing product running on an IBM 3033 mainframe. TRW asserts that unlike traditional word processing packages, a DCF is neither dependent upon nor designed around a specific terminal or printer and can be used with several multipurpose terminals.

The system, which requires some support, is mostly technically oriented and is used chiefly by systems developers for large documentation generation. It is also used by programmers and financial accountants. An Amdahl Corp. V8 has been installed to act as a dual host processor.

The company is also a pioneer in the area of teleconferencing. In 1980, it used satellite facilities to link up TRW centers in 28 cities for a seminar session on bankruptcy laws and, more recently, to allow a division president to deliver a speech from corporate headquarters in Redondo Beach, Calif., to 600 TRW executives gathered together in Cleveland for a three-day conference.

The OIS center is now engaged in an exercise to determine how these disparate activities can be brought together.



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Peripherals Will Boost Revenues

Mini Shipments Fall as Market Matures

By Bill Laberis
CW Staff

FRAMINGHAM, Mass. — Squeezed at the top of the range by low-end mainframes and at the bottom by increasingly more powerful micros, minicomputer manufacturers now find themselves competing in a maturing market in which system shipments actually declined during 1981.

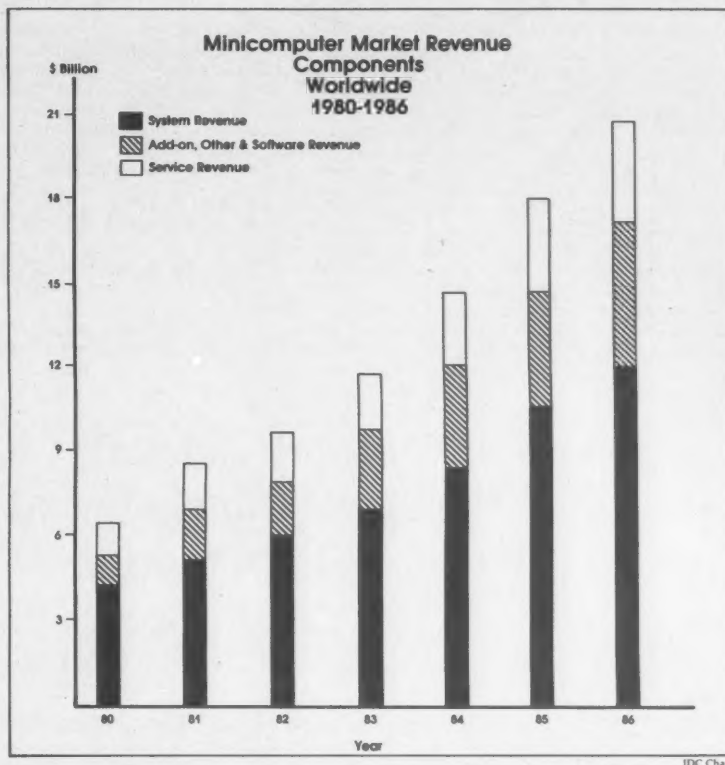
As a result of this market metamorphosis, mini manufacturers will see an ever-growing share of revenues arise from sales of add-on peripherals as users' needs for auxiliary devices increase, while 16-bit superminis yield to a market onslaught of 32-bit introductions.

These are some of the findings and prognostications contained in a recently released report, "Minicomputer Marketplace: 1982," prepared by International Data Corp. (IDC). IDC based its conclusions in the 95-page report on interviews with 15 vendors accounting for over 90% of minicomputer shipments, as well as on government and industry statistics.

IDC broadly defined a minicomputer as a machine falling into one of three classes: microminis, based on Digital Equipment Corp.'s LSI technology; traditional minis costing up to \$25,000, such as DEC's PDP-11 series; and superminis such as DEC's VAX-11 CPUs.

According to IDC, total minicomputer shipments in 1981 were down 5% from 1980 levels, or 149,000 systems shipped worldwide in 1981, compared with 156,000 the previous year. Virtually all

(Continued on Page 84)



OMB Head Warns Feds to Stay Out of High-Tech Industry

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — White House Regulatory Chief Christopher C. DeMuth recently reiterated the Reagan administration's resolve that the government must not compete with or overregulate the private sector in high-technology areas, particularly in telecommunications, data processing and information services.

The federal government must "get out of the way and let the private sector operate," DeMuth told a Nov. 19 meeting sponsored by the Information Industry Association (IIA). DeMuth heads the Office of Management and Budget's (OMB) Office of Information and Regulatory Affairs.

Regarding telecommunications, DeMuth said the legislation that OMB is drafting with the Departments of Commerce, Justice and Defense will be directed at forestalling attacks on AT&T and completely removing all communications regulation except where necessary to protect the U.S. public from clear monopolies.

The bill, he added, will attempt to "rearrange the federal/state jurisdictional split" to bring regulatory activities in line with the deregulation of AT&T.

Addressing the question of how to prevent federal agencies from unnecessarily competing with private information services providers, such as those firms constituting IIA membership, DeMuth said

(Continued on Page 82)

HP Earnings Up 25% in 1982

PALO ALTO, Calif. — With DP products accounting for 51% of revenues, Hewlett-Packard Co. has reported a 25% earnings gain for fiscal year 1982.

Profits totaled \$383 million, or \$3.05 per share, compared with earnings of \$305 million or \$2.49 per share in 1981. Revenues totaled \$4.25 billion, up 19% from last year's \$3.58 billion mark, HP reported. The annual figures reflect fourth-quarter revenues and earnings figures that were up 14% and 19%, respectively, over the same quarter last year.

John A. Young, company president and chief executive officer, attributed the improved results in part to HP's reaping the benefits of President Ronald Reagan's Economic Recovery Tax Act of 1981, as well as to the introduction of new products.

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Japan's Industrial Base to Flourish in '80s: Study

NEW YORK — Japanese colleges and universities graduate 22,000 electrical and electronics engineers each year, compared with about 19,000 graduates in the U.S., which has double Japan's population.

Additionally, the Japanese economy combines government-subsidized capital markets with low-profit objectives in sacrificing short-term profitability for long-term growth and market viability.

These are the factors, along with "a culture that does not embrace the same adherence to a regular change of jobs that is common in the West," that ensure that the Japanese will prove formidable challengers in the computer industry throughout the '80s, according to a report released by

MSRA, Inc. here.

The report, "Japan's Progress in the Office Automation, Photographic and Industrial Automation Markets," averred that Japan is actively moving toward reliance upon computer and communications technologies to fuel economic growth in the balance of this decade. This movement away from the reliance on primarily heavy industries, such as steel, shipbuilding and automobiles, is a response to a maturing of these markets and a general softening of demand for such products.

As the current recession has not bypassed the Japanese computer industry altogether, major computer vendors have exhibited strong market performances. This performance

has been due in part to the relatively weak Japanese yen, which has expanded exports and buoyed the performance of the high-technology companies, the report stated.

However, "The Japanese will likely remain most successful in those areas... which require little customer education, training or service," MSRA maintained. "It will likely be a much greater challenge for Japa-

nese vendors to penetrate successfully the computer business without making significant investments to develop sales and service networks in the West."

"Japan's Progress in the Office Automation, Photographic and Industrial Automation Markets" is available to the clients of MSRA, Room 200, 115 Broadway, New York, N.Y. 10006.

OMB Head: Feds Must Stay Out of High-Tech Industry

(Continued from Page 81)
OMB is committed to "exercising a

degree of skepticism in policy making in assessing the degree of [the] government's ability to best the private sector in supplying information services."

He added that the OMB has tentatively decided agencies' central computer operations should not have a monopoly on information provision. The government offices must set policies and standards, DeMuth said, but "it is in the interest of efficient information use" that agencies be able to use private computer services as well as their own.

On a related subject, DeMuth was asked how seriously the administration is considering legislation to deregulate the U.S. Postal Service. He replied the White House is looking into "the appropriateness" of such legislation, particularly to deregulate the private express statutes, which give the Postal Service a monopoly.

This proposal also fits in with the administration's philosophy of not barring the private sector from going into business in competition with the government, DeMuth said. He said the growing deregulation of telecommunications and new developments in communications technology suggest the "government is going to be left in the dust" within the next 10 years if it tries to compete.

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"Check this on the Dow" is a familiar sound to Ruth Gunning, Manager of Business Information Services at Rockwell International's Pittsburgh headquarters. It's a phrase executives from many departments use as they rely on the Business Research Center to get them information for marketing, communications, and strategic, financial and international planning projects.

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Software Mart To Grow: Study

NEW YORK — The computer graphics software market will increase from \$70 million in 1981 to \$1 billion by 1987, according to a market report released by Frost & Sullivan, Inc.

The entire market for computer graphics software and services will increase between 30% and 40% annually through the decade.

The study predicts a 30% annual growth in graphics services to more than \$500 million in 1987, climbing to the \$1 billion range after 1990. Independently supplied software packages, currently a \$100 million market, will top \$500 million by 1987.

Major market expansion is also expected in computer-aided design/computer-aided manufacturing, possibly as high as 65% annually. Turnkey systems will continue to dominate the market, with software costs increasing to 20% of the total cost of a turnkey system by 1990.

The report costs \$1,250 from Frost & Sullivan at 106 Fulton St., New York, N.Y. 10038.

High Risk in DP Arena

Liability Security Need Seen

By Bob Johnson

CW New York Bureau

NEW YORK — A pro-consumer bent in the courts, the proliferation of some problem software packages and a growing awareness of successful user suits are strong reasons pointing to a need for professional liability insurance in the DP arena.

So claimed Joseph P. Zammit, a computer litigation specialist and partner in the New York law firm of Reavis & McGrath.

Speaking recently before insurance executives here, Zammit said the complexity of both hardware and software is such that the risk of something going wrong with them in operation is high. Thus the potential consequences to a vendor selling problem hardware or software can be "catastrophic," he argued.

"If a court levies damages against a vendor for providing a defective product or service, they [the damages] are likely to be out of all proportion to the revenue generated by the vendor's sales, which could wipe out a small vendor and put a serious dent in the bottom line of larger ones," he said.

Zammit claimed there is adequate justification for vendors carrying liability insurance today, adding that there have been a number of recent judgments against vendors in which the users were awarded damages not only for the cost of the original purchase, but also for revenues lost as a result of implementing defective software. He cited a recent case in California where a federal Appeals Court upheld a lower court's \$2.3 million award to a dry cleaner, which had sued NCR Corp. [CW, Sept. 20].

Considering the proliferation of user suits, vendors can no longer afford to be self-insured, Zammit offered. He said that professional liability insurance in this area is "hot," and vendors should realize the benefits insurance companies can offer

them, including legal counsel with particular expertise in litigating user suits.

Zammit further claimed a pervasive "pro-consumer" attitude in the courts has translated into special problems for the vendor defending itself. "It is now a 'caveat-seller' situation in the DP industry, which cautions the seller to beware," he said, adding that computers are still "mystical" to most judges and juries, and juries find it hard to blame users for problems in computer disputes.

A typical \$1 million "software error-and-omission" policy for vendors carries an annual premium of \$10,000 to \$15,000, according to an insurance industry official.

Honeywell Establishes New Group

MINNEAPOLIS — Honeywell, Inc. has announced the formation of its Semiconductor Group, charged with consolidating the company's development and manufacturing of integrated circuit components.

The group will include Honeywell's Synertek, Inc., specializing in microprocessors and memories for the merchant market; the Optoelectronics Division, manufacturing optoelectronic components for military, commercial and industrial use; Vision Operations, Honeywell's in-house semiconductor facility; and the Solid State Electronics Division, which will begin marketing integrated circuits outside the company.

Albert C. Kibbler, currently vice-president and general manager of the company's Micro Switch Division, will become vice-president and group executive of the new group, which will be a part of Honeywell's Control Products Division.

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Mini Shipments Fall as Mart Matures: Report

(Continued from Page 81) this decline came in a soft U.S. market, with very little improvement expected when the 1982 shipments are tallied, IDC speculated.

These bleak results follow five years of shipments' growth averaging nearly 30%, IDC noted. "This decline can be attributed to the microminicomputer market for the most part," the report stated, adding that micro-

mini shipments will not reach 1980 levels until 1984.

Market revenues will continue to grow at about 20%, reflecting "vendors' accomplishments in generating revenues from sources other than actual sales of new systems," according to the report (see chart).

In the face of both a slack domestic economy and a relatively saturated U.S. minicomputer market, many

manufacturers, such as DEC and Data General Corp., are relying more heavily on international sales to maintain growth, IDC said. It is the international markets that hold the greatest potential both for new systems sales and for systems upgrades, the report stated.

The most fertile growth area in the U.S. mini market, on the other hand, lies in user upgrades from 16-bit to

32-bit machines, but only if interest rates decline and the general business climate improves, IDC predicted. For users, this will mean the appearance of more minis based on 32-bit architectures, the report said.

It is the stepped-up shipments of 32-bit minis, fueled by advances in applications software, that will account for a "surge" in mini market growth in the near term, IDC

said.

"There is a huge installed base of 16-bit superminis that will eventually upgrade to 32-bit systems, and with the emphasis on computer-aided design and manufacturing and other applications that 32-bit superminis are used for, the market will grow dramatically," the report offered. Supermini shipments, IDC predicted, will grow prodigiously from 27,000 systems in 1981 to 71,000 in 1986, according to the report.

Meanwhile, market offerings of 16-bit superminis will decline due to a combination of the increased migration of commercial applications software to 32-bit systems, lower priced 32-bit introductions and user need for larger addressing capabilities and virtual memory found in the 32-bit versions, IDC said.

Further, superminis will increasingly be viewed as viable alternatives to low-end mainframes, such as the IBM 4300 series, IDC said, particularly in distributed environments. The report concluded, "The 32-bit superminicomputer will be most vendors' path to the future and, as a result, research and development efforts will give these systems capabilities available on them only."

More information on "Minicomputer Marketplace: 1982," is available from IDC, 5 Speen St., Framingham, Mass. 01701.

Lexidata Lays Off 60

BILLERICA, Mass. — Graphics terminal-maker Lexidata Corp., whose sales grew over 100% in each of the past two years, has announced the layoff of 60 employees and an anticipated quarterly loss. Company officials also announced plans for a one-week plant shutdown between Christmas and New Year's Day.

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U.S. Micro Shipments Will Top Mainframes: IDC

FRAMINGHAM — The dollar value of desktop and personal computer shipments in the U.S. will exceed the value of mainframe shipments within four years, according to a research study prepared by International Data Corp. (IDC) here.

The study, *Personal/Desktop Computer Use in Large Organizations*, claimed that nearly 20 million personal computers will be installed worldwide by 1986, accounting for an installed base valued at \$67 billion. This projection represents a 58% annual compound growth rate over the 1982 installed value of \$6.8 billion worth of desktop and personal computers, IDC said.

"Just as data processing became a fact of life for large organizations in the 1960s, stimulating the creation of the MIS [management information systems] department to take responsibility, so has the emergence of the personal computer become a fact of life in the office of the 1980s, requiring similar delegation of responsibility," the study claimed.

Such changes translate into ex-

panded responsibility for some MIS departments, which may soon be faced with sizable acquisition and support decisions relative to desktops and personal computers, IDC said.

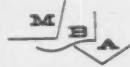
The study said the critical issue facing large organizations, as mini-based distributed systems yield to micro-to-host networks, is the assigning of appropriate responsibility for both the acquisition and management of the new networks.

Personal/Desktop Computer Use in Large Organizations is available at a single-copy price of \$4,500 from IDC, 5 Speen St., Framingham, Mass. 01701.

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Executive Corner

- Elmer I. Clegg has been promoted to vice-president of marketing for the Federal Systems Division of Honeywell, Inc.'s information systems business.
- Bernard Balter has been named vice-president and general manager of Dataguard, a company of Novo Communications, Inc.
- Bill Glynn has been named vice-president of finance at Eagle Computer, Inc., San Francisco.
- Gregg E. Ericksen has been appointed vice-president and controller of Honeywell, Inc.
- Charles Robert Haning has been appointed vice-president and chief financial officer at Beehive International, Salt Lake City, Utah.
- Roy Francis has been promoted to vice-president of product services for Software International Corp., a subsidiary of General Electric Information Services Co.
- Selman M. Kremer has been promoted to executive vice-president at Satellite Syndicated Systems, Inc., Tulsa, Okla.
- Verney Brown has been appointed group vice-president of custom products for American Microsystems, Inc.
- Joseph P. Ganley has joined Wabash Datatech, Inc., Rolling Meadows, Ill., as vice-president of marketing.
- Alan D. Katz has been appointed vice-president of product development at Multiple Funding, and Francis Dignan, who was a founder of the firm, has been appointed a vice-president. Multiple Funding is an operating unit of National CSS, the information services company of the Dun & Bradstreet Corp.
- Frank P. Frost has been named vice-president of North American sales at Micropo International Corp., San Rafael, Calif.

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CCIA Elects Officers

SAN DIEGO — The board of directors of the Computer and Communications Industry Association (CCIA) have announced the election of Stephen J. Keane, president of Basic Four Information Systems, to serve as chairman of the board of the executive committee. Charles W. Missler, president of Western Digital Corp., will serve as CCIA vice-chairman.

Other appointments include: John Bennett, president of Applied Data Re-

search, Inc.; Jean M. Belhumeur Jr., chairman and president of Scan-Optics, Inc.; Richard H. Cobb, president of Mathematica Products Group, Inc.; Richard J. Schineller, president and chief executive officer of Decision Data Computer Corp.; and George W. Sullivan, executive vice-president of Northern Telecom, Inc.

CCIA represents 70 firms that manufacture or supply of information processing equipment.

Codex Agrees to Market Christian Roving Crnet

MANSFIELD, Mass. — Codex Corp. has concluded an agreement with a Danish computer company to market the latter's packet-switching network. The network reportedly will be marketed in conjunction with Codex nodal processors, electronic data switches and modems.

The Christian Roving packet-switching network,

Crnet, is based on that company's communications processor. Codex claimed Crnet is X.25-based and allows the integration of distributed processing computing facilities while providing the benefits of a corporatwide resource-sharing network, the vendor said.

Codex, based here, is a wholly owned subsidiary of Motorola Corp.

Racal-Milgo To Enter Net Market

MIAMI — Racal-Milgo, Inc. has announced plans to market the first in a series of local-area network products, a new product area for the data communications products manufacturer. Although the company will give little detail on the introduction, to be unveiled around the first of the year, reliable sources have indicated the company will begin marketing network products already introduced in Europe by Racal-Milgo Ltd., the English parent company.

New Companies

Electronic Funds Consultants, Inc. will specialize in strategic, marketing and product planning support to government agencies, trade associations and small to medium-size companies in the financial services market. It is located at Suite 613, 1000 6th St. S.W., Washington, D.C. 20024.

John Hall & Co. is providing management counsel in strategic planning and marketing to the consumer electronics and related high-technology industries. The firm is located at 260 Columbia Ave., Fort Lee, N.J. 07024.

DM Data, Inc. is specializing in interpreting and transferring high-technology trends information to management. Other services will include management newsletters, seminars, reports and computer software. It is located at Suite 700, 6900 E. Camelback Road, Scottsdale, Ariz. 85251.

Sord Computer Systems, Inc., a Japanese desktop computer manufacturer, will enter the U.S. market with a line of personal computers said to have fast and expandable processing capabilities. The Tokyo-based manufacturer plans to appoint local distributors and open sales offices in principal U.S. cities early next year.

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Contracts & Pacts

Northern Telecom, Inc. and Sperry Univac have signed a cooperative agreement to develop compatibility between their voice and data communications and office automation products. A cooperative development test site at Univac's Salt Lake City, Utah, communications and terminals headquarters has already been established. Northern Telecom has also signed a similar agreement with Digital Equipment Corp. under which the firms will work together to develop a strategy to connect DEC's All-In-1 integrated office automation system with Northern Telecom's SL-1 digital business communications system.

Digital Datacom, Inc., of Laguna Niguel, Calif., has received an \$8.9 million contract from Thermeon Corp. of Tustin, Calif., for microprocessor-based computers that Digital Datacom has recently developed for its own use.

Kennedy Co. has received contracts totaling \$1 million for its magnetic tape transports and Winchester disk drives. Iskra Electronics, Ljubljana, Yugoslavia, will purchase Kennedy Series 9000 and Model 9700 magnetic tape transports; Uptron Electronics, Lucknow, India, has ordered Model 7300 8-in. Winchester drives, Model 6450 cartridge tape systems and Model 9700 reel-to-reel tape transports; and Sintrom Electronics, Reading Berks, UK has ordered the Series 9000 transport.

Gerber Systems Technology, Inc. has received a contract valued at over \$1 million from the Sacramento, Calif. Army Depot for a 10-terminal computer-aided design and manufacturing system.

Evans & Sutherland Computer Corp. has received a \$5 million order from Rediffusion Simulation, Inc. for a CT5 computer-image generator. Rediffusion will incorporate the image generator in the Advanced Cab and Visual Systems engineering simulator to be supplied to the National Aeronautics and Space Administration's Ames Research Center by American Airlines.

McCormack & Dodge Corp. and Prime Computer, Inc. have entered into a long-term joint marketing agreement to offer three separate McCormack & Dodge financial software systems to Prime customers. Prime sales representatives will recommend the soft-

ware systems, and McCormack & Dodge will provide users with application technical documentation, training and maintenance.

C&W Incotel, Ltd., of New York, a member of the Cable and Wireless Worldwide Communications Group, has signed a contract to provide Science Applications, Inc. with three custom-designed computer-based message

switches. The contract is valued in excess of \$1 million.

Teleram Communications Corp. has signed distribution agreements totaling \$6 million for its 3000 series of portable computers with Kaltronics Distributing, Inc., Northbrook, Ill.; Byte Industries, Inc., Hayward, Calif.; and Cane Technical Sales, Inc., White Plains, N. Y.

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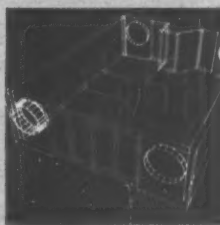
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For prompt consideration, please call Gene Ruppel COLLECT at (609) 234-1100. Or forward your resume and salary history/requirements to his attention at: CSC, Defense Systems Division, P.O. Box N, Dept. 1206CW, Moorestown, NJ 08057.

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If you are a highly motivated self-starter with a proven track record and are looking for an outstanding growth opportunity, with an excellent compensation and fringe benefit package, please send your resume, including salary history, in strict confidence to:

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Positions involves maintaining innovative IBM 370 Teleprocessing system. At least 5 years in-depth experience maintaining IBM OS/VS teleprocessing systems required, preferably CICS with 3270 terminals. Must be able to maintain systems singlehandedly. Degree required.

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Min. 3 yrs. experience in applications programming on IBM TP systems. Fluency in COBOL and Assembler with CICS and 3270 terminal knowledge a must.

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Responsible for management, maintenance and standards necessary for operation of large scale data base systems. Good communications skills. 5 years experience in data base management. Degree required.

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Responsible for production of 35 MM aperture cards to military specifications. Will instruct foreign personnel in micrographics production techniques. Degreed, 6 or more years directly related experience in 35 MM aperture card systems, including experience with either configuration management or micrographics systems analysis.

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Must have a strong background in troubleshooting computer mainframes and related experience in graphics, various mini and microcomputers. 3 to 5 years experience. EE degree preferred or its equivalent college level electronic training and/or military vocational training.

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Responsible for installing, repairing and maintaining all micrographics equipment. Assist in training micrographics staff in equipment operation. 2-5 years experience.

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COMPUTER SYSTEMS in Tucson, Arizona

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Our location in Phoenix, Arizona offers the sunny, relaxed lifestyle of the Southwest with all the advantages of a major metropolitan city. Let's talk about your future. Mail your resume to: Valley National Bank, Attn: John Jew, P.O. Box 71-A301 CW4, Phoenix, AZ 85001, or call us collect at (602) 261-1699. No agencies please.

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Norwich University
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Northfield, VT 05663

Deadline: December 15, 1982.

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SYSTEMS PROGRAMMER

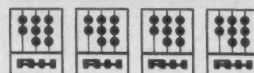
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SYSTEMS ANALYST. Design, modification & maintenance of complex computer programs, including program development in compiler construction involving symbol tables, lexical & syntactical scan, code generation & code optimization. B.Sc. in Computer Science, Math, or Physics. Must have knowledge of COBOL. \$558.50 per wk. to work 40 hrs./5 days/wk. PLEASE SEND RESUMES: Applied Data Research, Inc., Route 206 & Orchard Rd. CN-8 Princeton, NJ 08540.

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Professional position requires 3 years full-time experience at least one of which must have included systems design work in an on-line environment. Solid COBOL experience required. College degree preferred but can be offset with additional experience. Knowledge of governmental financial applications, RPG II or WANG VS System or similar Supermain a plus. Salary \$24,636-29,952 a year. Recruitment will remain open until the position has been filled.

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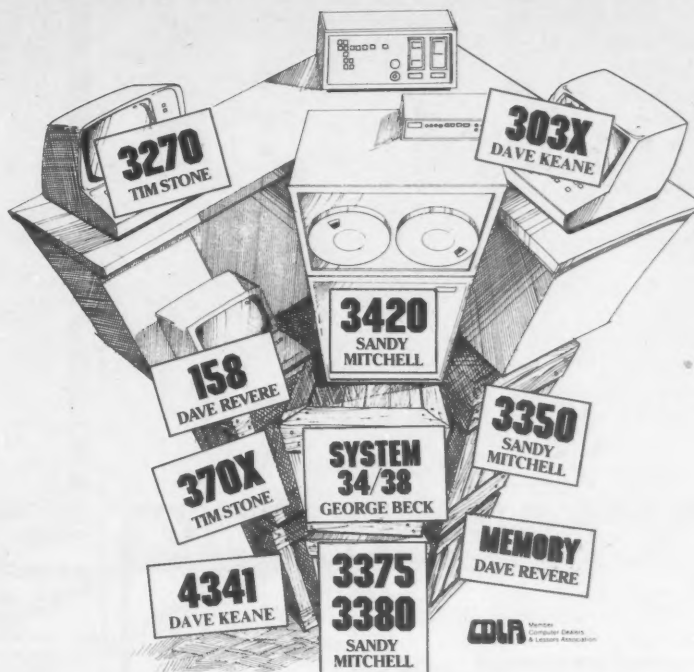
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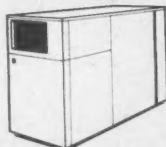
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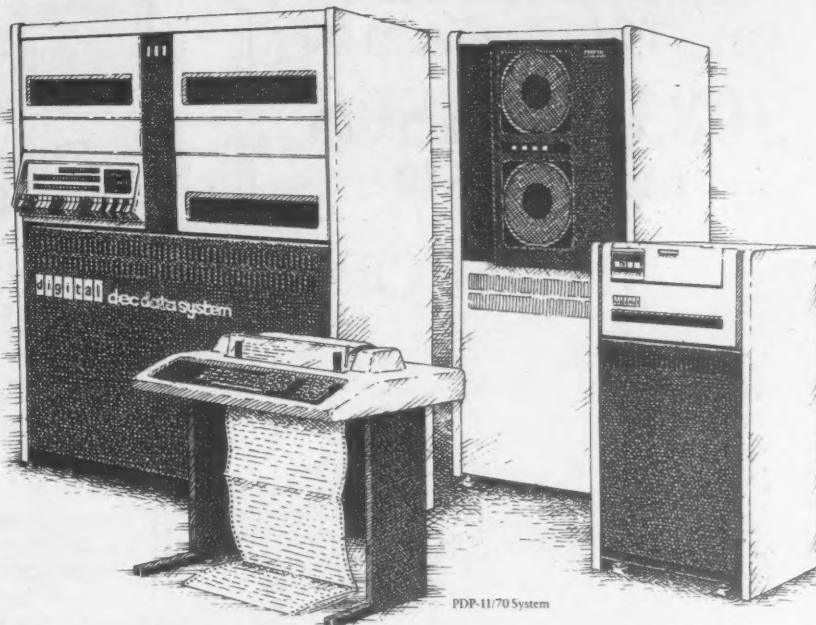
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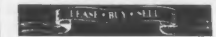
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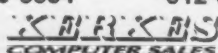
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AWARD OF A CONTRACT FOR EXCLUSIVE LICENSE TO MARKET AND INSTALL EDUCATIONAL SOFTWARE SYSTEMS

Notice is hereby given that the Office of the Los Angeles County Superintendent of Schools, hereinafter referred to as County Superintendent, intends to issue a Request for Proposals for award of a contract for exclusive license to market and install educational software systems as hereinafter specified. The systems to be licensed are:

- Program Budgeting and Accounting System (PBAS)
- Purchasing, Accounts Payable, Accounts Receivable System (PAR) including a stand-alone warrant writing module
- Special Education Program and Fiscal Control System
- Credentials System
- Revenue Projection and Analysis System

All systems are designed for and are currently operating in an on-line mode on the County Superintendent's Honeywell 66/80/DPS 8-44 configuration. Various applications also operate in a batch mode.

Contractors who are interested in receiving a Request for Proposals document shall submit a letter to:

Mrs. Sara Lee Bates
Contractual Relations Officer
Office of the Los Angeles County
Superintendent of Schools
9300 East Imperial Highway
Downey, California 90242

Letters of interest must be on your firm's letterhead, signed by an authorized agent and received by no later than December 29, 1982. The letter shall include your firm's qualifications to market and install large-scale database oriented, on-line systems on Honeywell and any other computer equipment, including required conversion and maintenance support. Indicate the size of your firm and the number of qualified technical and maintenance personnel who would be available to perform the work to be done. Discuss your firm's actual experience in installing systems on large-scale Honeywell equipment and conversion to other computing equipment.

Questions regarding this Notice of Intent shall be addressed to the attention of Mrs. Sara Lee Bates at the address specified above or by telephoning (213) 922-6488.

The County Superintendent reserves the right to determine firms who will receive the Request for Proposals based upon stated qualifications.

Wanda L. Purdy, Director
Division of Internal Business Management

For: Furnishing Lockbox Services for the Parking Violations Bureau.

Proposals will be received by representatives of The New York City Department of Transportation, Parking Violations Bureau, Rm. 1017, 40 Worth Street, New York, NY 10013 as follows:

Proposals will be received until 4 PM on the date specified.

Monday, December 20, 1982.

Request for proposal documents may be obtained from Mr. Donald Cirillo, Chief, Contracts/Purchase Section, Department of Transportation, Division of Fiscal Affairs, Room 1017, 40 Worth Street, New York, NY 10013, between the hours of 9 AM to 4 PM, Monday - Friday.

For: Furnishing Computer Processing Services for the Parking Violations Bureau.

Proposals will be received by representatives of The New York City Department of Transportation, Parking Violations Bureau, Rm. 1017, 40 Worth Street, New York, NY 10013 as follows:

Proposals will be received until 4 PM on the date specified.

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Proposals will be received until 4 PM on the date specified.

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Request for proposal documents may be obtained from Mr. Donald Cirillo, Chief, Contracts/Purchase Section, Department of Transportation, Division of Fiscal Affairs, Room 1017, 40 Worth Street, New York, NY 10013, between the hours of 9 AM to 4 PM, Monday - Friday.

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